American Druggist

Vol. XIII. No. 10. NEW YORK, OCTOBER, 1884. Whole No. 124.

[Original Communication.]

SPIRITUS ODORATUS AND OTHER PERFUMES.

BY R. ROTHER, OF DETROIT.

As an agreeable perfume, the official Spiritus Odoratus is not a phenomenal success, but the formula is phenomenal in so far that it is the first attempt on record to produce a fragrant essence with an overwhelming proportion of oil of rosemary. An essence of rosemary was surely not contemplated, but the result is certainly nothing else, nor ought anything else to be expected under the circumstances. It is furthermore to be regretted that the unprecedentedly large proportion of precious neroli is wholly wasted in such a connection. Had the amount of oil of rosemary flowers been one part, at most, instead of eight parts, something like a good cologne water would have resulted from the official formula. Acetic ether is a perfectly gratuitous adjunct which is not known to perform any useful function in such a mixture. There is probably no well established precedent extant that could warrant its addition. The volatility of acetic ether contrasts extremely with that of the other ingredients excepting the alcohol and water. The action of the alcohol and water is merely that of a solvent and diluent. In use the permanent presence of the alcohol would be decidedly undesirable, and hence it cannot evaporate too soon. The spirituous effusion may be momentarily agreeable and refreshing, but it is not a distinctly essential office of the perfume. If the acetic ether was incorporated with this purpose in view, its action would differ in no wise from that of the alcohol and hence it is most superfluous. Had the intention been to supplement the stimulating effect of the alcohol by means of the ether, the presence of water should primarily have been avoided and perhaps, then, the device would not have suggested itself.

In perfumes generally, the absence of water is highly beneficial for other reasons, and the pharmacopœia could not have done better than to reduce or altogether abandon the unusually large proportion of water in its Spiritus Odoratus.

Considering the fact that most essential oils are very odorous, it is somewhat remarkable that their boiling points are so high. Of course, bodies generally are slowly dissipated at the lowest temperatures, and therefore independent of boiling points, but complete and rapid volatilization can generally be effected only at the temperature of ebullition. Nevertheless the distillation of volatile oils is affected in conjunction with water. The explanation that is generally given of this peculiar effect is that the oil is not transformed into vapor, but that it is carried over mechanically with the steam. At the boiling heat of water, some of the oil would certainly become vaporized, but by no means in sufficient quantity to account for the rather large transmission. The writer believes that a plausible explanation is afforded in the assumption that vapors dissolve one another at temperatures independent of their respective boiling points, forming mixtures or rather solutions having characteristic features of stability at certain specific temperatures similarly to solutions in general. In an analogous manner solids absorb liquids and gases. This action becomes again very valuable in the use of perfumes.

It has long been empirically known that the presence even in small proportion, of certain solids imparts greater lasting qualities to perfumes undergoing consumption. For this purpose ambergris and musk stand pre-eminent, then follow orris, tonka, benzoin, etc. There is scarcely a compound odor of any note that does not contain one or more of these substances. The most excellent perfumes are not without ambergris and musk. Most of these bodies, are exceedingly agreeable odors in themselves when properly diffused, and although they do not make up the mass of the compound containing them, they are nevertheless its most important and enduring components.

Musk was officially recognized in the older Pharmacopœia, but the new one gives a formula for a tincture of musk. This preparation is officially sanctioned only as a medicine, being compounded in the remarkable proportion of one part in ten parts of diluted alcohol and is five times as strong as that of the German pharmacopœia made with the same menstruum. Musk must certainly be an important and reliable therapeutical agent, when compared with others of similar effect, in the light of its fabulous cost. It is, moreover, strange that so little of the most ordinary physical and chemical properties of such a presumably valuable substance should be known. No modern analysis of musk appears to exist. The Pharmacopœia, in speaking of its solubility, says that one-tenth of it is soluble in alcohol and one-half of it in water. This leaves everything in doubt as to the relative efficiency of these solvents upon the activity and wherein this really resides. The writer, in operating upon the best obtainable "grain" musk, found that strong alcohol readily and completely abstracts the odor and bitter flavor in the formation of a light brown-yellow solution. The residue, when treated with water, yields an insoluble residue and a clear and deep brown-red solution having neither taste nor smell. The addition of potash to this solution deepens the color, and aside from evolving a little ammonia and imparting a slight soapy odor, like that produced by alkalies with animal tissues in general, no other change was noticed. Therapeutically it would now be important to know whether the alcoholic solution or the aqueous extraction of the residue contains the medicinal activity. As far as the sphere of perfumery is concerned, this result shows that strong alcohol, pure and simple, is the proper menstruum for extracting musk.

The action of water on musk gives a brown-red, opalescent, moderately bitter and odorous solution, together with a residue. Treatment of the solution with potash evolves a profusion of ammonia and modifies the odor, however, to no advantage. The residue, when acted upon by strong alcohol, leaves a further residue and produces a light brown-red solution which on evaporation yields a considerable odorous and bitter residuum. From these results it appears that water extracts the odor and taste only partially, and that the remnant probably retains the bitter part. The presence of water doubtless exerts a prejudicial influence on musk. This effect is, however, not observable with the alcoholic solution. It appears, therefore, that some of the constituents of musk, naturally co-existing, when caused to react by the intermediation of water, mutually destroy each other. The writer some years since found that an apparently good sample of musk on treatment with alkaline water became totally inert as a perfume.

It is a great fallacy to believe that alkalies develop the odor of musk. They strengthen the odor in so far as an abundant effusion of ammonia is concerned, and modify it to the extent of supplanting it with a soapy effluvium. If it is desirable to incorporate an alkali, borax is preferable, as it produces little or no change. In this connection it may not be inopportune to state that borax, in some instances, acts beneficially in regenerating odors that have "turned" or "soured." Some time since, the writer had a large bottle of imported bouquet jockey club which shortly after opening acquired a sickening odor. It was mixed with some cheap cologne made of bergamot, lemon, lavender, and tolu, and it tainted the whole. After treating small portions of this mixture with various agents, borax was applied to some of it and appeared to improve it. All the mixture was then treated in a similar manner and filtered after macerating about a week. The product was quite good and readily salable.

Ether acts on musk by leaving a residue and forming a faintly yellow solution. The residue is free from bitterness and the odor and flavor of musk, but it has a strong, purely saline taste. It imparts to alcohol a deeper tint than that of the ethereal solution, but no bitterness and smell. The ethereal extraction yields on evaporation an outer margin of transparent, light brown, unctuous matter, having a bitter taste and the odor of musk, and an inner circle of colorless, tasteless, and odorless fatty substance. The weight of the total extract is about 25 per cent of the musk.

Chloroform acting on musk gives a residue and a faintly brown-yellow solution. The residue has a strong, salty taste, but no bitterness and odor. The solution leaves, on evaporation, a transparent, light-brown, fatty mass of bitter taste and the odor of musk. The amount of extract is somewhat less than that given by ether.

It appears from these results that the odor and bitterness go together, and are in all probability the characteristics of a single definite substance representing the fundamental features of musk. It is also evident that chloroform yields a product approximating the pure principle closer than the results given by the other solvents. Alcohol does not wholly dissolve the ethereal and chloroformic products. It dissolves the ether extract, excepting an inert white portion, and from the chloroform residue it takes up all but a few brown, oily globules. These various residues are scarcely affected by dilute alkalies and acids during a moderate period of reaction, but such effect as does result is in nowise beneficial.

Next to the more important solids used in perfumery, stands oil of rose, among the liquids. Nearly all bouquets of the first order contain this delicious scent. Neroli, or the oil of orange flowers, is also highly important, and finally, aside from innumerable other essences occasionally incorporated, the oils of bergamot and lemon, and frequently lavender, constitute the bulk of most compound perfumes.

Many of the fine bouquets are produced by copious additions of the tinc-

tures prepared from various flower pomades. Although these valuable adjuncts lend the superficial freshness so much admired, they are by no means important, as a great number of most excellent odors are generated without their aid. In fact, the jasmine tincture is fairly competent to replace all others.

A false impression largely prevails that an increased number of ingredients augments the excellence of odors. Owing to this belief and the formidable combinations resulting from its practice, comparatively very few perfumes are compounded in a small way. Most of the best odors are, however, very simple in structure. The art of perfumery consists in skilfully combining a relatively few fundamental odors so that, whilst effecting their perfect blending, a new aroma results, superior to each component separately. To illustrate this, the following formula is given as an example of a remarkably sweet and lasting perfume produced in this manner:

Oil Lemon.....	½ fl. drachm.
" Rose.....40	drops.
" Orange Flowers...15	"
Orris root in coarse powder.....	1½ drachms.
Tonka bean in coarse powder.....	1 drachm.
Musk in grain.....	7 grains.
Alcohol, 80%.....24	fl. ounces.

Mix and macerate for seven days, and then filter.

The improvement the writer would suggest in this formula is to employ a full strength, highly rectified or deodorized alcohol, commercially termed "cologne-spirit," and first prepare with this a tincture of the orris and tonka, to which the other ingredients be then added, and the mixture again filtered after due maceration.

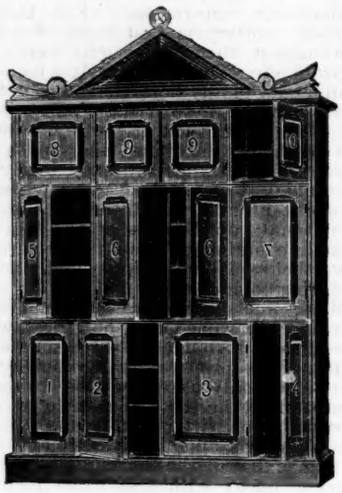
In conclusion, the writer will append a formula for a very rich and lasting cologne water, infinitely superior to the official article and less costly. It is a modification or rather simplification of formula which the writer published in the *Tennessee Pharmacal Gazette* for January 27th, 1875, p. 28.

Oil Bergamot.....12	fl. drachms.
" Lemon..... 6	" "
" Lavender flowers 2	" "
" Orange " 2	" "
" Rose 2	" "
" Musk, grain, genuine.....	4 grains.
(Or good commercial extract musk.....16	fl. drachms.)
Cologne Spirit.....	7½ pints.
Water, sufficient to make	8 pints.

Mix the cologne-spirit with 5 fluid ounces of water and add the remaining members of the formula; macerate the mixture for five days and filter.

Even if desirable, it would be impossible to clarify by simple filtration a cologne immediately after mixture, or any similar compound rendered milky by the addition of water. Such turbid solutions in many instances clarify themselves spontaneously in time, and thereupon filter clear and readily. When, however, as is often done, it is attempted to force a clarification by passing the liquid through magnesium carbonate or similar absorbing agent, the operation is tedious and imperfect. As a rule, readily filterable mixtures result when the dilu tion of the menstruum is first performed before adding the oils. This rule also applies with great success in the preparation of elixirs and aromatic waters in conjunction with the essential clarifying medium. In these cases the oils are first triturated with the absorbent powder and then incorporated with the completed menstruum by gradual addition and constant stirring. This procedure insures a saturated solution which at once filters perfectly clear and rapidly. Precipitated calcium phosphate has repeatedly been suggested for this purpose, for which it is unquestionably superior to all others. In general it is not advisable to filter colognes through absorbent powders, but least of all through magnesium carbonate or charcoal The calcium phosphate appears to be unobjectionable here, and the writer believes that filtration through it even secures immediately the desirable blending of the ingredients ordinarily termed "aging."

DETROIT, MICH.



A New Poison Case.*

BY HENRY BIROTH, OF CHICAGO.

SCARCELY a year passes without some serious accident by poisoning in drug stores of our country, and a large proportion of these sad cases arise from want of systematic precautions, or from absent-mindedness, or haste. Often, indeed, we are unable to account for the occurrence of the mistake, and obliged to exclaim with due humility: "It is human to err;" but while it is impossible to wholly prevent mistakes in dispensing, such cases should surely be reduced to their minimum by every means possible. Not only do these fatal errors carry bereavement to the family of the victim, but the reputation and business of the druggist in whose store the error was made, are at the same time seriously damaged, if not ruined, and the whole profession of pharmacy suffers from the shock to the public confidence.

Every effort made in this direction to prevent these accidents should be considered as an act of humanity and welcomed with gratification, as it relieves the druggist, as well as the public, of a burden of anxiety, fear, and mistrust.

The well-known fact that a poison-safe is a rare thing to be found in most of our drugstores—and where it is found, the least organized—this fact and a recent case of poisoning occurring in my own city from dispensing morphine, in place of quinine, so impressed me that I took up my former studies over the problem of prevention, determined to find, if possible, some practical means of guarding against the recurrence of such fatal mistakes.

I believe that the poison case which I have designed, and to which I now beg leave to invite your attention, will fulfil the end in view more perfectly than any other which has come to my notice.

This poison case is not intended to hold all remedies potent enough to cause alarming results when given in overdoses, for it would clearly defeat the practical value of this safeguard to make it too general. In other words, we could not gain much by moving the greater part of our stock into a separate room or case to be called a poison closet. My poison case is intended to contain only the most potent narcotics and, more especially, those that are frequently used. My aim is to isolate those dangerous substances from all others, and from each other, in such manner that no one who is at all fit to be a pharmacist can possibly commit any mistake between them.

To further increase the efficiency of this safeguard, I recommend that, whenever practicable, dilutions be made of such substances as, for instance, morphine, strychnine, corrosive sublimate, and arsenious acid. The dry triturations or dilutions which I employ in my own store, and which I have found to be exceedingly convenient, are uniformly prepared so that eight grains represent one grain of the active ingredient. The liquid dilutions are solutions of which one fluidrachm represents one grain of the active ingredient. Of course, these proportions can be changed, according to individual preference, making them decimal, if desired, or otherwise; but I regard it as essential that the strength of each dilution should be the same as that of any other of the same class, in order that there may be no error resulting from defective memory.

The doses of the powerful agents of which dilutions should be made are so small that the corresponding doses of their respective dilutions will be found none too large, and the diluents wholly unobjectionable. It is obvious that, if, at any time, one bottle should be mistaken for another and one of these poisons thus dispensed, the dose given would be greatly reduced and the danger correspondingly diminished. At the same time, the dilution insures greater precision in weighing, reducing possible deviation from exactness to a minimum.

This poison case is quite compact. In fact, I was surprised to find that a case twenty-four inches broad, twenty-seven inches high, and five inches deep, is amply sufficient. It thus occupies so little space that it becomes easy to find an appropriate place for it in the neighborhood of the prescription counter.

It contains ten compartments, as follows:

No. 1. Labelled "Morphine." This contains an original bottle of morphine (one ounce), with the manufacturer's label undisturbed, and behind it may be placed several drachm-vials of morphine. These bottles are intended for use only when large quantities are called for.

No. 2. Also labelled "Morphine." This is to contain the dilutions of morphine, viz.: in front, a six-ounce bottle of solution prepared as above mentioned, each fluidrachm to contain one grain of morphine sulphate, the diluent to consist of alcohol and water, in the proportion of 1 to 7. The addition of alcohol preserves the solution perfectly. Next to it stands a four-ounce bottle of trituration prepared from one drachm morphine sulphate and seven drachms sugar. Behind these bottles are three shelves. One of them may be used for acetate, valerianate, hydrochlorate, and other salts of morphine; another for pills of morphine; and the third for any other or similar preparations.

No. 3. Labelled "Opium." To contain a four-ounce bottle of powdered opium, and a six-ounce bottle of tincture of opium. Behind these are again three spaces, of which one may be used for denarcotized opium, etc., another for pills, and the third for whatever other opium preparations may be required.

No. 4. Labelled "Cyanides." In this compartment is to be kept an original bottle of cyanide of potassium, behind, and in front, two original

* Read at the meeting of the Am. Pharm. Assoc.

one-ounce vials of hydrocyanic acid, one opened and the other in stock.

No. 5. Labelled "Corrosive Sublimate."—Intended to contain an eight-ounce bottle of corrosive sublimate, and an eight-ounce bottle of solution, prepared of the same strength and in the same manner as the morphine solution; each drachm containing one grain of bichloride of mercury. Behind these are spaces for proto- and biniodide of mercury, yellow sulphate, etc., and also for pills containing corrosive sublimate, the iodides, or other powerful mercury preparations.

No. 6. Labelled "Arsenic." This compartment has two doors. It is to contain a two-ounce bottle of trituration prepared of one drachm arsenious acid and seven drachms sugar; and also an eight-ounce bottle of arsenic kept in a paste-board box in order to distinguish it from the bottle of trituration, since the contents of both bottles are white powder. This additional precaution is deemed highly desirable, although the sizes of the bottles are very different and the labels conspicuous and distinctive.

There is also in this compartment a round eight-ounce bottle of Fowler's solution, and an oval eight-ounce bottle of Donovan's solution; also a four-ounce bottle of solution of chloride of arsenic, and another four-ounce bottle of solution of arseniate of sodium; these two four-ounce vials are of different shape. Behind are spaces for a number of small arsenical preparations, such as arseniate of quinine, arseniate of sodium, red and yellow arsenic, etc., and for pills of arsenious acid.

No. 7. Labelled "Strychnine." This will hold a two-ounce bottle of trituration prepared from one part strychnine sulphate and seven parts sugar; and also a four-ounce bottle containing a solution of the same strength as the morphine solution; the diluent in this case to be of one part alcohol and three parts water. Behind may be placed the small bottles containing the pure alkaloid and its acetate and sulphate, etc., and also granules containing strychnine.

Compartments 8, 9 and 10 are not labelled. They are intended for miscellaneous poisons as described below.

No. 8 is to contain a two-ounce bottle of each of the tinctures of aconite, belladonna, and gelsemium; and behind these may be placed small vials of atropine, atropine sulphate, aconitine, apomorphine, etc.; also pills of these.

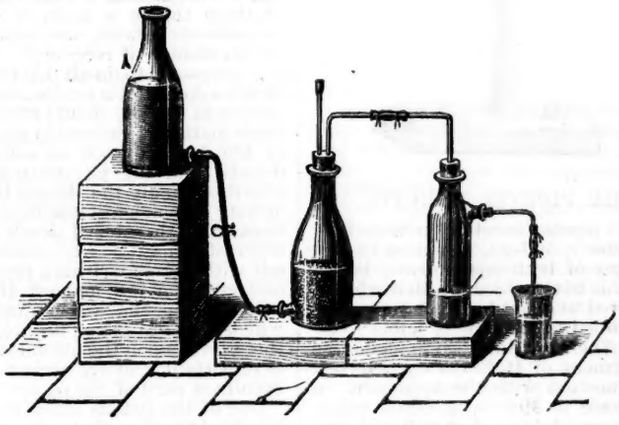
No. 9 contains two-ounce bottles of the stronger acids, as muriatic, nitric, nitro-muriatic, and sulphuric acid, and also of pure carbolic acid for internal use. Behind may be kept small bottles of triturations of calomel and of tartar emetic, one in a dark bottle and the other in a white one; both prepared from one drachm of the chemical to seven drachms of milk-sugar. If considered to be more practicable, these two mixtures may deviate from the rule and be composed in the proportion of one to three. Milk-sugar is to be preferred in these preparations. There may also be kept in this compartment, behind the acids, small bottles containing twenty-five per cent solutions of the extracts of belladonna, hyoscyamus, and opium, prepared from one-ounce extract, to one ounce each of water, alcohol, and glycerin; these solutions keep perfectly and are often very convenient.

No. 10 may contain two-ounce bottles of the tincture of veratrum viride, wine of opium, and deodorized tincture of opium. Behind these may be placed such articles as digitalin, codeine, hyoscyamine, veratrine, and other alkaloids.

The top of the whole case may be utilized for narcotic solid extracts, or for larger stock bottles of tinctures of aconite, opium, etc., or fluid extracts.

It will be seen that, as far as practicable, I have varied the sizes and styles of the bottles themselves to increase the chances of protection. The labels are all conspicuous and very full, giving in each case the exact strength of the several dilutions, etc. The fact that the smaller vials of poisons are placed on the little shelves behind the larger bottles, although seemingly inconvenient, is in itself a very effective safeguard by reason of the necessity of removing the bottle standing in front, before the other can be reached. There are no locks and keys to this case, because I believe these to be wholly unnecessary; it is enough to know that there is nothing in the case but poisons. Moreover, I believe that where locks and keys are placed on the doors of poison cases, the doors are generally unlocked, or great inconvenience arises when the key is mislaid. The doors in this case are readily opened and closed and fit snugly so as to remain closed when pushed to. The only compartment which may require lock and key is case No. 1, containing the original bottle of morphine.

In this little case are thus contained all that is of especially dangerous nature in the drug store, and, as arranged, it will unquestionably prove the most effective means yet devised to guard against fatal mistakes in dispensing, giving protection to the public and to the dispensers alike.



Improved sulphuretted hydrogen apparatus.

IMPROVED SULPHURETTED HYDROGEN APPARATUS.

DR. KUBEL, of Holzminden, has found that ferrous sulphide which has been used for generating hydro-sulphuric acid may be permanently preserved, and available for immediate use, by washing it with water and keeping it under glycerin.

He suggests the form of apparatus shown in the illustration.

Two Florence flasks of about 1 pint capacity are connected together by a piece of tubing slipped over short glass-tubes, passing through rubber-corks in the bottom tubulure of each flask. One of the flasks is closed with a rubber cork through which passes a funnel-tube and a bent piece of glass-tube which is connected by tubing with a similar piece passing through a rubber-tube to near the bottom of another flask (wash bottle) which latter is again connected, by a lateral neck [or more simply, by a second tube passing through the stopper, ED. AM. DR.], within the delivery-tube of the gas. The rubber-tube connecting the Florence flasks is provided with a pinch-cock.

The generator is charged first with pieces of quartz, about the size of beans, and upon these the sulphide of iron is placed, in pieces of about the same size as the quartz, until it is about half full. The wash-bottle is partly filled with water, and the stopper of the generator having been inserted, a sufficient quantity of hydrochloric acid, diluted with 2 parts of water, is poured into the Florence flask (*A*) connected with it, which is placed upon blocks of wood. The flow of the acid upon ferrous sulphide is regulated by the pinch-cock.

When the acid is exhausted, the liquid in the generator is made to run back into *A*, the latter emptied and refilled. If the flow of gas is to be stopped before the acid is exhausted, the liquid is made to flow back as before, but the flask *A* is then disconnected and both orifices stoppered with rubber corks. Upon the ferrous sulphide in the generator enough glycerin is poured to cover it, and this is simply drained off when the apparatus is to be used again.

When it is desired to generate hydrosulphuric acid free from arsenic, sulphide of calcium or barium is used instead of ferrous sulphide. In this case no quartz need be put in the generator.

For generating small quantities of the gas, the simple apparatus of Otto (consisting of a small flask, or a simple test-tube with delivery tube) may be used. As soon as the gas is no longer wanted, the liquid is poured off, and a little glycerin poured in until the apparatus is to be used again.—*Arch. d. Pharm.*, 222, 374.

Existence of Manganese in Plants and Animals.

WHEAT contains from $\frac{1}{15000}$th to $\frac{1}{5000}$th of its weight of metallic manganese. The bulk of the metal exists as the salt of an organic acid. The bran and the starch do not contain any. Rye, rice, and barley contain much manganese. It is also found in potatoes, beets, carrots, lentils, peas, lettuce, parsley, and in infinitely small traces in apples and grapes, though the leaves of the vine are tolerably rich in manganese. It is found in a larger proportion in cocoa, in a still larger in coffee, and most of all in tea. In the 50 to 60 grammes of ash obtained from one kilo of tea are found 5 grammes of metallic manganese. On the other hand, manganese is not found in oranges, lemons, garlic, onions, etc. Human blood does not always contain it. Very small traces are found in the milk, the urine, the bones, and the hair. It is almost entirely eliminated in the solid excrements, whence it must be regarded as a mere accidental constituent of the animal system, not essential to life.

Medical science must renounce the use of manganese as a substitute for iron. Tea, coffee, and tobacco require an abundance of manganese in the soil.—E. Maumené in *Comptes Rendus.*

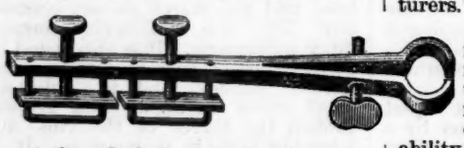
Incompatibility of Iodide of Potassium and Sulphate of Quinine.

AT a recent meeting of the Société de Biologie, Mr. Rabuteau drew attention to the fact that iodide of potassium and sulphate of quinine, when administered at one and the same time, produce symptoms of anxiety, anorexia, nervousness, and general *malaise*. The effect resembles that produced by an impure iodide containing iodate. A salt of this nature is well known to develop free iodine when coming in contact with the acids of the stomach. According to Rabuteau, the same thing happens when iodide of potassium and sulphate of quinine come together in the stomach; free iodine is separated.—*Gaz. des Hôp.*

THE PIPETTE BURETTE.

THE "pipette burette," patented by Dr. Hübner, of Jena, combines the advantages of both instruments, but is amenable to the objection that when it is allowed to stand for some time after being filled, some fluid is liable to escape. The inventor recommends the employment of Hoffman's pinch-cock in connection with the apparatus, in preference to Mohr's, as better calculated to regulate the flow of liquid, and in the *Archiv der Pharmacie* for July he presents an arrangement of the apparatus and of the pinch-cock, as shown in the adjoining figures.

The burette has its upper end closed by an India-rubber cork, and is filled by suction, applied by means of the rubber tube connected with the side-branch at the upper end. The tubes being grasped by the pinch-cock pre-



vent the admission of air when the burette is not in operation, and the attachment of the pinch-cock to the upright of the stand, as shown in the illustration, enables either burette to be operated with one hand.

Canquoin's Paste.

Fused Chloride of Zinc	10 parts.
Alcohol	2 "
Wheat Flour	15 "

Rub the chloride of zinc to a fine powder and make a paste with the alcohol, then add the wheat flour, using strong pressure with the pestle. When the paste is homogeneous, spread with a roller into sheets about one-eighth of an inch thick, and after a few hours' exposure, preserve in a well-corked bottle.—*St. Louis Druggist.*

The Prescription of Specialties.*

BY PROFESSOR O. A. WALL, M.D., PH.G., OF ST. LOUIS.

THE question, to what extent a physician is justified in specifying certain preparations in his prescriptions, is one to which widely different answers are apt to be given, according to the pecuniary and business interests involved. Many pharmacists take the ground that it is unprofessional for the physician even to specify a certain manufacturer's pills, fluid extracts, elixirs, etc., while others freely acknowledge his right to do so.

This question is one which can best be answered by looking at it from the physician's standpoint, for if it is to his own and his patient's interest that he should specify, then it is proper for him to do so. The physician's duty to his patient is not comprised merely in the visit, the diagnosis, and the written prescription, but it includes also the responsibility for the proper execution of his orders. The physician owes it to his patient to see that he is placed under the best possible conditions for an early restoration to health; to provide proper hygienic surroundings; to regulate his baths, his diet, and nursing; and last, not least, to see that the proper medicines are administered at the necessary time.

In other words, the physician must regulate and control every influence that may restore his patient to health, and the neglecting or slighting of any of these things is a sin of omission towards his patient, who looks to him for his chance of recovery. Not only is it necessary to do all this for the patient's sake, but it is for the physician's own good that he should attend to all these matters. Success in any pursuit in life depends upon an attention to details; and the physician who pays attention to all the details that may or may not assist in rescuing his patient from threatened death, is more successful than he who contents himself with merely writing a prescription and giving a few general directions, which, from the careless manner in which they are given, do not impress themselves upon the attendant's mind as important, and are neglected to the imminent peril of the patient.

One of the details often overlooked by physicians, to their own and their patient's lasting injury, is the looking after the character of the medicines dispensed on their prescriptions.

We have often heard pharmacists say that it is wrong for a physician to direct a patient to go to a certain drug store or to prescribe a certain preparation "thus compelling pharmacists to load their shelves with the same preparations made by different manufacturers."

Let us consider whether this is so very wrong. Many pharmacists speak and write as if they think that it must be taken for granted that every pharmacist is honest and in all regards, ability, education, and business tact, equal to every other pharmacist. But is there anything in the profession of pharmacy that compels us to believe this? Do the gentlemen claiming this, believe it themselves?

Can they not always point out to the physician reasons why he should use their own prescription blanks and send his patients to them for their medicines? The fact is, the business of pharmacy is like any other business or calling in life. When we find that even in that presumably noblest of callings, the ministry, there are scoundrels and dishonest, corrupt men, can we expect better in any other calling?

Pharmacy is followed by able, mediocre, and incompetent men; by honest, indifferent, and dishonest men. Nor must it be taken for granted, as seems to be so often implied in articles written for pharmaceutical journals, that all retail pharmacists are honest, and all manufacturing pharmacists are dishonest, or that the preparations of the former are invariably better than the latter. Nor is the reverse true.

Mankind is the same all the world over, and when there are retail pharmacists who are indifferent to the quality of the goods they dispense, and consider only the price of the goods in determining which they will buy, there will also be manufacturers who will make cheap preparations, and wholesalers who will supply them. The trade adapts itself to the requirements, and the demand regulates the supply.

Every pharmacist knows that preparations are often offered in the market for less than the ingredients of an honestly made preparation would cost. If he buys this preparation, is he not guilty of encouraging and abetting dishonesty? Does the plea that he does not know the character of the preparation, but supposes it to be all right as long as he hears no complaint, exonerate him from the charge that he is wilfully jeopardizing human life and health for the sake of pecuniary profit? Is he any more honest than one who would substitute cinchonine for quinine, or would only give half weight or measure of important medicines?

Does not the fact that price-lists quote "Commercial Red Cinchona" at 14 cents, prove that such stuff is consumed as red cinchona? And is it not likely that "cheap" goods are made from cheap materials?

Every one knows that there are honest and dishonest pharmacists, honest and dishonest manufacturers, and honest and dishonest goods in the market, and the latter kind is by no means rare.

Could we but believe that every pharmacist was honest and competent, and that all medicines were equally efficient, there would be no necessity for the physician to specify. When we have a valuable watch that needs repairs, we do not take it for granted that every one who has a sign before his door, announcing himself to be a watchmaker, is therefore to be trusted with our watch, but we will pass a dozen watchmakers, and go a long distance to take our watch to one we know to be a competent watchmaker. We do not take it for granted that all watchmakers are competent to repair our watch, but our action practically implies the contrary, namely, that we consider them incompetent until we know the contrary.

If then, we are so particular about our watch, why then should we not be equally particular about our much more valuable lives? When we choose a physician, we try to do so intelligently. We have, or think we have, reasons why we prefer our physician to the great number of other physicans around us. Why should we act differently in regard to the pharmacist, and prefer the one who happens to live nearest to us merely on account of this fact?

Should we not rather as patients, prefer to send our prescriptions to one whom we know to be competent and honest, rather than to those who may be equally honest and able, but about whom we know nothing?

Or, as the patient frequently cannot judge, is it not best to trust our physician to choose for us when his interests and ours are so intimately interwoven, for our health and the physician's reputation alike depend upon the quality of the medicine dispensed.

Nay, even more, is it not to the honest and competent pharmacists' interest that business probity and integrity and professional ability should be recognized and appreciated? It is plainly the duty of the physician to advise the patient how and where to obtain the best medicines, and he does

* Read at the Meeting of the Amer. Pharm. Assoc.

so generally by using the prescription blank of the pharmacist whom he prefers. His use of such a blank is clearly a specification of the preparations of that particular pharmacist, and an indorsement of them. It does not seem to occur to those who argue against the physician's right to designate a certain manufacturer's preparations, that he is equally wrong and unprofessional when he uses their blanks. If one is wrong, the other must be the same. In one case it is an indorsement of a wholesale manufacturer, in the other case of a retail manufacturer, with the advantage in specifying the wholesale manufacturer's goods that he can obtain them everywhere and anywhere, while the others are obtainable only in one drug store.

We must admit that there is a difference, and often a great difference, between the various preparations sold under the same name; that some are almost worthless, others very active.

The physician may have become accustomed to the use of a certain preparation, say aconite. He knows what a certain dose of that particular preparation may reasonably be expected to do, and he does not know what action others may have. They may be weaker or stronger, it does not matter to him. He knows what he is about when he specifies a certain dose of that particular preparation, and it is no imputation of incompetency or dishonesty to any one when he specifies it. He simply tries to go sure and take no chances, and to substitute other preparations is dishonesty when we can obtain the one specified, and it is even a question if it would not be better and more honest to decline to fill the prescription rather than substitute without the consent of the physician or patient.

No matter whether we try to argue that ours is just as good; the physician is entitled to get what he prescribes, and he is not to be blamed if he uses his influence against the pharmacist so substituting, for he who is dishonest in small things, cannot be trusted in greater things.

Honesty in all things is the best policy. The retail pharmacist may convince the physicians in his neighborhood that he has the best and purest medicines, in which case the physician will no doubt allow him to use his own preparations. We have known of physicians who specified certain preparations, but have given permission to individual druggists to use their own preparations when the prescriptions were taken to their drug stores. There is no objection to this; it is rarely the case that the physician specifies except in the case of the more important remedies, or when he is not sure to which drug store his prescription will be taken. In regard to the majority of ingredients, he leaves the choice to the pharmacist's judgment. When he does specify, his wishes should be respected and complied with as far as possible.

To conclude, then, it is the writer's belief, based upon many years' experience, that the physician is derelict in a part of his duty if he does not see to it that his patient obtains proper medicines, and he is equally unmindful of his own best interests.

He should therefore specify to the extent that he may know that proper remedies are dispensed, either by directing the patient to go to a certain drug store, or by specifying a particular preparation with which he is familiar, and in which he has confidence, and it is certainly wrong for him to show less interest in so important a matter as medicines than he shows in regard to his wearing apparel, his food or fuel, or any other commodity in regard to which he exercises an intelligent choice.

Pepsau.*

BY HENRY BIROTH, OF CHICAGO.

THIS is an article prepared in 1853 by an old gentlemen, who lived in the neighborhood of Jamestown, Chataqua County, N. Y., leading a solitary life and going by the soubriquet of 'Crazy Owen.' He had often remarked to people of his vicinity that he had made a discovery, for which he claimed rare medicinal virtues, and which would bring him lots of money, but no attention was paid to this, because people generally regarded him as a crank.

After his death, the date of which could not be learned, but which must have occurred soon after he had his product ready for the market, his habitation was visited, when heaps of packages, containing this pepsin, were found, all sealed, wrapped, and packed in dozens; some of it was also found in barrels and in heaps on the floor.

As to the method employed in preparing it, nothing was ever learned, since he lived very secluded and shunned society, and the secret, for such he regarded it, died with him.

These few samples and the above memorandum, were given to me by Mr. F. C. Billerbeck, one of my former clerks, now in business in Chicago. I tested the preparation, it is insoluble in acidulated water, it has no solvent power on albumen, and does not coagulate milk; its age, however, being thirty-one years old, may account for it.

The very characteristic circular surrounding the bottle reads as follows:

"PEPSAU:

"For the cure of Dyspepsau, Jaundice, Liver Complaint, together with all diseases arising from a disorganization of the stomach. This, I believe, is the Gastric Juices of the Stomach of the Ox, producing the Gastric Juice required by man to digest his food. Prepared by Eben Owen; by no other, I believe, in this world.

"Directions for using.—Take a small half teaspoonful, fifteen minutes before eating, in a half gill of cold water. My advice is, to eat light suppers.

"Prices for Pepsau, by the gross or more, eighty cents per bottle: retail, one dollar a bottle. This is got up under prayer, and will do good, I believe.

EBEN OWEN.

"APRIL 16th, 1853."

Fungoid Deposit in Dilute Phosphoric Acid.*

BY SAMUEL G. ADE, CHICAGO.

IT has long been observed by pharmacists that in various specimens of dilute phosphoric acid, as usually made, a complex fungoid growth soon makes its appearance, having a somewhat tenacious or mucoid character, diffusible, and of a yellowish-gray color. I have also noticed a deterioration of the solvent power of the acid, corresponding in direct ratio to the fungoid development of the organized deposit. Owing to a want of time, I have been unable to make a quantitative analysis, but have found, by practical experience, that it does not correspond to the requirements of the Pharmacopœia in solvent power, as further demonstrated by the much larger quantity of acid required to dissolve a given weight of quinine. This shows practically that the fungus grows at the expense of the acid. A marked difference was observed in its action on litmus, the acid containing the fungus giving a much feebler reaction; the acid containing no fungus producing a very decided reaction.

The specific gravity of U. S. P. acid is 1.057, while the s. g. of acids containing this deposit were respectively 1.049, 1.053 and 1.055, all of which seem to indicate a general depreciation of value for pharmaceutical use.

Microscopically, the growth was found to consist of a minute network of fibrillated tubules, diverging from central nuclei in all directions, like the radii of a circle. The nuclei seem to occupy and give birth to new prolongations, four, five, or more being closely aggregated in small groups, forming new foci of development. Without doubt these small, spherical bodies (the nuclei) constitute the ferment by which the fungus grows and maintains a progressive existence; thus it is enabled, by the fermentative process, to take such nourishment from its surrounding medium as to depreciate the acid value of the preparation. It is very evident that a deteriorated article, lacking the U. S. P. requirements to the extent here demonstrated, is practically unfit for dispensing, and certainly ought to be rejected. It is better to make dilute phosphoric acid, according to the Pharmacopœia; making the acid extemporaneously when needed. A proper dilution of the full strength U. S. P. preparation, with distilled water, would give us a reliable acid, and exclude the possibility of its detorioration from fungoid changes.

In conclusion, I would be glad to hear from any member of the association upon this subject, and any additional information, on points not mentioned, will be very thankfully accepted.

The Preservation of Plasters.*

BY HUGO W. C. MARTIN.

"LEAD plaster and other plasters of the U. S. Pharmacopœia become hard and brittle by keeping. How can their soft consistence, as when freshly made, be preserved?"

When accepting this query, the writer hardly expected to meet with so many obstacles in trying to solve this problem, and consequently regrets that the results mentioned in this report are not quite satisfactory to himself. The greatest hindrance was the want of a laboratory, the manipulations therefore being necessarily conducted in the store proper, which was certainly disagreeable if not detrimental to the health of the assistants sleeping there at night. Aside from this, the odor given off was of such a penetrating and persistent nature that it would remain on the premises for nearly a week after an experiment, often causing remarks by my patrons, such as "Why, what a funny odor; cooking your supper? Whew, how dis drug store smell, etc." The writer thus has contented himself with trying to solve but the most essential part of the query relating to lead plaster, since lead plaster enters into 12 out of 17 of the officinal ointments. After various trials and experiments on a number of different formulas without any better result than that of the officinal, the writer finally constructed a formula which, if not perfect, at least would seem to be quite an improvement. It is as follows:

Castor Oil	..parts	I.
Olive Oil	"	VIII.
Oleic Acid	"	II.
Oxide of Lead (litharge)	"	VI.
Water	"	XVI. Q.S.

The oxide of lead was first rubbed to a fine powder in a mortar, then mixed with the oleic acid and the oils, and lastly the water, boiling, added to the mixture. This was then boiled for nearly four hours by continuous stirring and the constant addition of boiling or hot water as it was required. At no time was the water entirely evaporated before the product was finished, but on the contrary I probably had excess of water several times, my

*Read at the meeting of the Amer. Pharm. Assoc.

*Read at the Meeting of the Amer. Pharm. Asso.

object being to guard against a sufficiency and to prevent a negative result. The substitution of oleic acid for part of the olive oil would certainly seem to facilitate matters as well as to make a much whiter plaster. The addition of castor oil was based on the following: It is generally supposed that lead plaster owes its soft consistency, in a great degree, to the presence of glycerin.*

If such is the case, and there does not seem to be any reason for doubt, it is probably due to the mechanical action of the glycerin, as the writer has found by actual experiment that fresh lead plaster, if remelted and subjected to boiling in a quantity of water, is deprived of part of its glycerin and causes the lead plaster to become a great deal more brittle. In using castor oil I expected to obtain the same mechanical action, if not a chemical one, in combining with the oleic acid, since we have several acids present in castor oil. As to the chemical action of these acids, the writer does not vouch for. The mechanical, however, is quite perceptible. Though the plaster made after this formula is not quite up to the standard of the Pharmacopœia test as to its solvency in oil of turpentine, I must say that I have come across but very few samples that would not leave some residue or sediment after treating with the turpentine. This can, no doubt, be remedied by the addition of a little more oleic acid to the previous acid, as the residue would indicate unchanged oxide of lead. The sample attending this writing has been subjected to the severest cold we have had last winter, way below zero, and again to the warm weather a week ago. It has never changed its color one particle and has apparently remained the same in consistency during the various climatic changes. It is adherent, yet not excessively sticky, is quite firm yet pliable, and not brittle, and in appearance would seem to be something wished for. At our next annual meeting I will endeavor to answer that part of the query pertaining to the balance of the plasters.

Cinchona Assay.†

BY EDWARD GOEBEL, OF LOUISVILLE.

WITHOUT wishing to criticise the Pharmacopœia, I desire to state my experience with the method recommended by that work for the assay of total alkaloids in cinchona bark. Having had occasion to examine a number of barks recently, I believe the officinal directions may be somewhat simplified and improved without changing the chemical steps of the process, however. By strictly following the directions, viz., "treating 20 Gms. of the powdered cinchona with milk of lime, drying, digesting with 200 C.c. alcohol, transferring to a filter, and percolating 200 C.c. additional alcohol through the powder, I found that the residue in the funnel again treated with alcohol, the liquid filtered and evaporated, left a small quantity of very bitter extract. Subsequently I proceeded as follows: "Place 15 Gms. of cinchona, treated with milk of lime and perfectly dried, in a flask, add 150 C.c. alcohol, weigh the whole, digest the loosely-stoppered flask and contents for about two hours at 150°–160° F., cool, replace the slight loss of weight by alcohol, filter through a covered filter 100 C.c., equivalent to 10 Gms. of bark, and proceed with this extraction practically as directed by the Pharmacopœia." In this way, I think, greater accuracy is insured, besides its being a saving of time and alcohol.

This part of the pharmacopœial directions: "Distil or evaporate the filtrate to expel all the alcohol, cool, pass through a filter, and wash the latter with distilled water, slightly acidulated with diluted sulphuric acid, etc," no one certainly would attempt to follow literally, for after expelling the alcohol there remains in the evaporating capsule but a small quantity of an extract-like mass, and the intent is, no doubt, to have this residue treated with acidulated water in the capsule, and this receptacle also carefully washed.

The precipitated and washed alkaloids are directed to be removed from the filter, transferred to a tared capsule, the filter washed with acidulated water, this liquid treated with solution of soda, any resulting precipitate collected on another small filter, and removed from this to the capsule in which the whole is to be dried. The removal from the filter is presumably directed on account of the low melting point of quinia, but by drying the mixed alkaloids in the tared filter, merely a softening of the mass results, without there being any danger of loss. In conclusion, I may mention that the barks examined ranged in alkaloidal percentage from 5.700 down to 0.250, the former an East Indian red bark, the latter a sample of powdered so-called "yellow bark," and this was, by the way, not the bark which I failed to exhaust by the officinal process of extraction.

The Practicability of Kerner's Test.*

BY HENRY B. PARSONS, OF NEW YORK.

KERNER'S test for the purity of quinine sulphate has been adopted in the latest editions of both the German and the United States Pharmacopœias. The directions of the United States Pharmacopœia are, practically, as follows: One gramme of the quinine sulphate is dried until it ceases to lose weight in a water oven. To the dried residue is added 10 cubic centimeters of distilled water, and the mixture is cooled to 15° C. (59° F.) by setting the dish in iced water, if necessary. This temperature is preserved for half an hour, when the liquid is separated by filtration from the undissolved quinine sulphate. Five cubic centimeters of this filtrate, representing one-half gramme of the original sample, are now to be gently mixed with seven cubic centimeters of water of ammonia of specific gravity 0.96 at 15° C. If the quinine sulphate is of the required purity, the turbidity caused by the first admixture of the water of ammonia should entirely disappear when the mixture is thoroughly accomplished.

The principles upon which this test is based are as follows:

I. The most common impurity of quinine sulphate is cinchonidine sulphate.

II. Drying the sulphate of quinine serves two purposes, the determination of the percentage of moisture, and, as is asserted by German investigators, the rendering more freely water-soluble of the cinchonidine sulphate present as impurity.

III. Keeping the mixture of sulphates and distilled water at 15° C. for half an hour is necessary if uniform results are to be expected, as the solubility of these sulphates is greatly increased by a higher temperature.

IV. The amount of water is also exactly specified, as the quantity of sulphates dissolved depends directly upon the proportion of the solvent used.

V. By experiments made with pure quinine sulphate and with commercial samples containing known amounts of other cinchona alkaloids, Kerner and other German chemists, and in this country Prescott, have all accepted the statement that the five cubic centimeters of filtrates, obtained as above described, should afford a clear solution with seven cubic centimeters of ammonia water of specific gravity 0.96 at 15° C. This requirement is based upon the fact that only a small amount of quinine sulphate ($\frac{1}{7}$) is dissolved by the cool water used, while a much greater quantity of cinchonidine sul- (soluble in 100 parts of water at 15° C.) will pass into solution. Also the alkaloid quinine which may be precipitated by the addition of a portion of the ammonia used in this test is redissolved by the addition of much less ammonia water than would be the case with cinchonidine, quinidine, or cinchonine. Hence, if the specified amount of ammonia water fails to produce a clear solution, the presence of an undue amount of other alkaloid is to be inferred.

The question suggested by this query now recurs. Is this a practical and reliable test whereby a good sample of quinine sulphate may be distinguished from one containing an unauthorized percentage of other alkaloidal sulphates? Anticipating this question, the writer has aimed, during the past three or four years, to satisfy himself in regard to various points which have been raised at different times in connection with the acceptance or rejection of quinine sulphate. On the whole it may be stated that the judicious use of Kerner's test will lead to a safe decision in regard to a given sample of sulphate of quinine. The following are some practical results which have been obtained.

Firstly: If the sample of quinine sulphate is dried as directed by the U. S. Pharmacopœia, the amount of ammonia water required to produce a clear solution is generally, but not always, about 0.5 cubic centimeter greater than where the same sample is not dried before testing. Whether the impurities are rendered more soluble—as asserted by the Germans, or whether the quinine sulphate itself is more soluble, the writer cannot assert from personal experience.

Secondly: This test is liable to mislead, unless every detailed precaution is observed. The sample must be carefully weighed, the distilled water accurately measured, the temperature strictly maintained at 15° C., and, above all, the ammonia water should be of exactly the proper specific gravity, viz., 0.96 at 15° C.

Thirdly: If all these precautions are observed, it is my experience that some brands of quinine sulphate require less than the specified 7 cubic centimeters of ammonia water. The average for the 1033 samples here reported is 6.1 cubic centimeters. Great differences as regards the indications by this test, were noticed for the five brands here reported. The following is a summary:

No.	Maker.	No. of Tests.	Average C.c. of Ammonia water.	No. of Samples rejected
1	American.	16	9.5	16
2	"	217	5.7	1
3	German.	11	6.1	None
4	"	627	6.0	7
5	Italian.	162	6.8	35

All samples rejected required more than 7 cubic centimeters of ammonia water. Brand No. 5, Italian, was delivered in cans of two sizes; the larger cans contained quinine rather more bulky than usual, and it was this quinine which failed to meet Kerner's test.

Owing to the fact that every sample marked here No. 1 American failed to stand the test, it was not deemed advisable to multiply the number of tests. The best of all the brands, as regards purity, seems to be the one marked No. 2 American. Next come Nos. 4 and 3 German, and next No. 5, Italian. Probably the latter would stand about the same as the German brands were it not for the poorer quinine in the large cans above described,

*See Nat. Disp., page xx. Drug. Circ., page 18-81. A. F. W. Neynaber, also Drug. Circ., page 117-81. Ed. S. Sykes.

†Read at the meeting of the Amer. Pharm. Assoc.

*Read at the meeting of the Amer. Pharm. Assoc.

which increased the average amount of ammonia required.

In conclusion, the writer would say that, in his opinion, the careful application of Kerner's test will reveal the presence of undue proportions of such foreign alkaloids as have, up to the present time, been found as natural impurities due to imperfect methods of separation on the manufacturing scale. Whether this test will reveal all possible admixtures of the more recently discovered and more rare alkaloids of true and false cinchona barks is a question not answered as yet, but one deserving further study.

In applying Kerner's test in cases where much depends upon the result, I would advise that several samples be taken from different parts of the same can, as it is frequently true that these samples vary considerably. If the average result is unfavorable, the quinine sulphate should be rejected.

Modification of Kerner's Test *

BY HENRY MACLAGAN, OF NEW YORK.

THIS test is without doubt one of the best yet devised for ascertaining the quality of sulphate of quinine, lowering as it does to a minimum the possible quantity of cheaper alkaloids, but, while it is very useful in the hands of the chemist in his laboratory with every convenience at hand, there are several difficulties in the way of its every-day use by pharmacists generally. Its accuracy depends so much upon conditions not always readily secured, that I deem it not a safe test in any but experienced hands. Water of ammonia of certain strength, and an almost absolute correctness of temperature are required, and there are few retail pharmacies in which these requirements can be met. Thermometers, even the best, vary somewhat, and a single degree makes considerable difference here, and even if the examiner were possessed of an accurate instrument, it is not an easy matter to maintain a constant temperature for half an hour as directed. The strength of the ammonia is perhaps more easily regulated, but even here there is a chance of error, and everything considered, I think it must be admitted that Kerner's test is somewhat liable to lead to erroneous or valueless conclusions.

A modification of it which I have used for some time, and which gives equally correct results, regardless of temperature, etc., is as follows:

About one-fourth of an ounce of sulphate of quinine known to be pure or nearly so, is placed in an eight-ounce stoppered bottle, the bottle filled with water and well shaken. This forms a standard solution, the excess of sulphate keeping the solution always saturated at any temperature. On the same shelf with this are kept, water of ammonia (about 0.960 is best) and distilled water, so that all three are always the same temperature. When a sample of quinine is to be examined (compared is a better word), about one gramme of it is put in a stoppered bottle with about 10 c.c. of the water, the bottle placed on the shelf by the side of the standard solution, and both shaken at intervals for half an hour. Five c.c. of the standard solution are then filtered off, and the quantity of ammonia necessary for a clear solution ascertained; the same quantity should give a clear liquid with five c.c. of the solution to be tested, if the quinine was pure. Or if it is desired to make allowance for one or two per cent or more of cinchonidine (the most common impurity) that salt can be added to the pure sulphate, and the standard solution made of the mixture in the proportion of 1.0 gramme to 10 c.c. of water, the solution to be tested being made in the same way. Pure sulphate of quinine for the standard solution can be had by recrystallizing ordinary sulphate about three times. It is then pretty certain to be pure. The solution will keep indefinitely.

* Read at the meeting of the Amer. Pharm. Assoc.

Soap for Removing Stains.

IT has been for long a great desideratum to obtain an article really possessing the frequently rather contradictory properties and qualities demanded of such an article. Many productions have indeed been well pushed for the purposes in question, but the effective articles are few and far between. Only too often the much vaunted "stain soap," consists of nothing else than cocoanut soap, and does not contain a trace of either ox gall, turpentine, or any other ingredient suitable for increasing the detergent powers of a soap. A favorite trick, according to *Moniteur de la Teinture*, employed by unscrupulous demonstrators of the efficacy of the article in which they deal, is removing a stain which they make on a piece of cotton cloth with a brush charged with gas tar. If, however the tar used be examined, it will be found that it has been well mixed beforehand with strong acid, and so can be removed almost as well without soap.

A good stain-removing soap ought always to smell rather strongly of turpentine or similar compounds. In the glove-cleaning trade the quality of the soap specially prepared is of the highest importance, and much attention is paid to this article by careful operators. There is no reason whatever why a special article for removing accidental stains, which do occasionally occur in even the best managed works, should not be prepared in every bleach, dye, and print works, especially as there is often the necessary skilled chemical superintendence ready at hand in the person of the works' chemist. We give the two best formulæ known, with full directions for preparing the soap satisfactorily:

Take 22 pounds of the best white soap and reduce it to thin shavings. Place it in a boiler, together with

Water	8.8 lbs.
Ox gall	13.25 lbs.

Cover up and allow to remain at rest all night. In the morning heat gently, and regulate it so that the soap may dissolve without stirring. When the whole is homogeneous and flows smoothly, part of the water having been vaporized, add

Turpentine	0.55 lbs.
Benzin, best clear	0.44 lbs.

and mix well. While still in the state of fusion color with green ultramarine and ammonia, pour into moulds, and stand for a few days before using. The product will be found to act admirably, and the yield is very good indeed. The second method we shall give is rather more difficult to carry out than the former one, as it requires a little skill in soap boiling to prevent the soap coming out unevenly on stirring, and the introduction of the ox gall requires to be done carefully.

Take of

	Lbs.
Cocoanut oil	27.5
Tallow	2.2
Soapstone (talc)	4.4
Caustic soda, sp. gr. 1.349 lbs.	15.4
Ox gall	6
Turpentine	0.3
Benzin	0.1
Brilliant green	0.1
Ultramarine green	0.05

Melt the fat, add the stone and color, cool to 20° C., and then add the solution of soda. When all is well united and mixed, add, very gradually, the gall, continuing the agitation without stopping for some time after all has been added. Should any separation take place, cover the boiler up for a few seconds, and if this does not help, fire up again, and continue stirring. Lastly, add the turpentine and benzin. Pour into moulds, and stand before using. This preparation, when properly applied with a brush, will remove the most refractory stains without injury to the cloth.—*Scient. Amer.*

Tasteless and Odorless Solution of Valerianate of Ammonium.

MR. R. ROTHER proposes to render valerianate of ammonium odorless and tasteless by adding borax to its solution. According to his investigation, the result of adding borax to an aqueous solution of ammonium valerianate (rendered alkaline by ammonia) is the formation of valerianate of sodium, metaborate of ammonium, and metaboric acid.

The following formula is recommended:

	Grains
Ammonium Valerianate	119
Borax	191
Water of Ammonia	q. s.
Distilled Water, enough to make	8 fl. oz.

Mix the valerianate with 1 fl. oz. of distilled water, and add water of ammonia, drop by drop, until a clear and slightly alkaline solution is produced. Then add 2 fl. oz. of distilled water and the previously powdered borax, and when all has dissolved, excepting a few contaminating crystals of borate of calcium, and distilled water to the measure of 8 fl. oz. and filter.

The solution contains practically two grains of the sodium valerianate in one fluidrachm. It is not absolutely odorless, but is free from the peculiar objectionable valerianic odor.—After *Am. Journ. Pharm.*

Elixir of Pepsin.

P. VIGIER, the author of the *Elixir de Pepsine* of the first edition of the new French Codex, explains why he chose the formula there published, which does not prescribe any aromatic, and the omission of which has been unfavorably criticised.

When a liquid containing less than 12 per cent of absolute alcohol is used for making the elixir, the latter does not keep well. If the alcoholic strength is over 18, a good deal of pepsin is precipitated. For this reason, a strength of 12 to 15 per cent of alcohol is preferable. In constructing the formula of the elixir, he desired to produce a mixture of water, alcohol, and syrup, which was intended to be flavored *according to taste*, since the flavor appeared to be a minor consideration.

Good flavoring-materials for this purpose are rum, kirsch-wasser, and vanilla. With rum, for instance, the following would be a good formula:

Pepsin (pure)	20 parts
Distilled Water	335 "
Syrup	400 "
Rum (45% alc.)	265 "

Macerate the pepsin in the mixed liquids [better: dissolve the pepsin in the water, then add the syrup and rum.—ED. AM. DRUGG.], and filter after twenty-four hours.

This elixir contains about 10 per cent of alcohol, or about 15 per cent, if the amount of sugar be deducted.

During these experiments, Mr. Vigier says that he has noticed that all pepsins are not equally adapted for making alcoholic solutions. Amylaceous pepsin [such as Boudault's] produces very good solutions of this kind, according to the author. English pepsins obtained by scraping the mucous membrane of the stomach are almost insoluble, and produce very unsatisfactory solutions. Saccharated pepsins, prepared by precipitating the ferment with common salt and subse-

quent admixture of sugar of milk, though they are very soluble, *yield only very feeble alcoholic solutions*, which is probaby due to the fact that the pepsin is still mixed with some common salt.

But there are also some pure ("extractive") pepsins which yield alcoholic solutions of feeble power. Hence it is *always* necessary to assay the product by making an artificial digestion.

Glycerin, which has been vaunted as an excellent solvent and preservative of pepsin, is not recommended by Mr. Vigier, who says that it produces feebly-active solutions.

It has been proposed to add diastase (ptyalin) and pancreatin to liquid preparations of pepsin; but this combination is altogether irrational. Hydrochloric acid has likewise been much recommended as an addition to bring out the digestive power of pepsin; yet this is not at all necessary, as it does not suit every case, and does *not* augment the digestive power, as the author states he has ascertained by numerous experiments.

In assaying alcoholic preparations of pepsin, the latter must be diluted with water, since without the latter they do not dissolve any fibrin. It is best to add 3 parts of acidulated water to every 1 part of wine or elixir of pepsin.

IMPROVEMENT IN WASH-BOTTLES.

EVERY analyst is aware that on blowing into an ordinary wash-bottle, the jet issues at first with a considerable violence, not unfrequently causing a loss of a portion of the precipitate or liquid contained in the filter.

The cause of this violent squirting is evident, being due to the contraction of the forcibly projected jet by the narrow orifice of the delivery tube. On ceasing to blow, the column of water sinks back, but on again blowing the same troublesome phenomenon recurs.

The following arrangement easily removes this inconvenience. A portion of the tube, inside of the wash-bottle, and dipping into the liquid is cut off, and a small vent-tube attached to it by a piece of rubber-tubing. The accompanying cut illustrates this vent-tube. Into its conical portion, a piece of glass rod is ground in air-tight. On blowing, this glass-valve is raised and only enough water can pass it to deliver a moderate jet. When blowing is discontinued, the valve falls back into its seat and the column of water standing above it is prevented from flowing back. On again blowing, the jet will be delivered without undue force, as before.—*Ber. d. Deutsch. Chem. Ges.*, 1884, 1080.

Why is the Tropical Man Black?

SURGEON MAJOR N. ALCOCK has contributed to *Nature* (Aug. 21st, p. 401), an interesting communication on the reason why tropical man is black, in which he suggests that, as in the lowest animals pigment cells placed behind a transparent nerve termination exalt its vibration to the highest pitch, the reverse takes place when, as in the negro, the pigment cells are placed in front of the nerve terminations, and that the black pigment in the skin serves to lessen the intensity of the nerve vibrations that would be caused in a naked human body by exposure to a tropical sun, that in fact the pigment plays the same part as a piece of smoked glass held between the sun and the eye.—*Pharm. Journ.*

Mercurous and Mercuroso-Mercuric Iodides.*

BY HENRY MACLAGAN, OF NEW YORK.

AFTER reading over the physical characters of mercurous iodide as given in the various pharmaceutical and chemical works, a student of chemistry would scarcely imagine that the substance under consideration was a definite chemical compound, or accepting this fact, would not have as high an opinion of the inflexibility of chemical laws as they are entitled to. One authority states that its color is dark olive-green, another that it is yellowish-green, another greenish-yellow, and still another says yellow, and it is scarcely possible that these differences can be due to mere errors of judgment on the part of the describers, the variation being too wide to admit of this theory. What, then, is the cause of this difference? There is but one answer to that question, viz., that the substances described were not pure mercurous iodide, and the variations in color were simply due to varying proportions of impurity. The very method of its manufacture, the direct union of the two elements is in itself sufficient to prove that, as a slight consideration of it will show. When chemical equivalents of mercury and iodine are rubbed together, some red iodide is always formed. This cannot well be prevented, and it is only by long-continued trituration that it can be reduced, and no maker ever takes the trouble to do this; but after a certain point is reached, is contented with washing out the red with alcohol. The resulting product then is clearly not pure mercurous iodide, but a mixture of this and metallic mercury, for it is plain that, if a part of the mercury takes double its share of iodine, another part must go without any, and different proportions of free metal easily account for the various colors. From a medical point of view, there is perhaps not much objection to a little of this, as it can have but little other effect than to lessen the actual amount of iodide in the dose given; still even this is not desirable when the quantity varies from three to eighteen per cent, as the writer has found it.

If to a solution of mercurous nitrate in water, acidulated with nitric acid, potassium iodide is slowly and cautiously added, a precipitate is produced which is of a pure yellow color, and which, when washed with water and dried, is about twice the weight of the potassium iodide used. Alcohol shaken with it and dropped into water gives no evidence of red iodide, and repeated careful analyses shows its composition to be, in 100 parts: iodine, 38.8; mercury, 61.2; in other words, that it is mercurous iodide. Assuming, then, that mercurous iodide is yellow, it becomes a very easy matter to account for the greenish color of most commercial samples, because we know that finely-divided mercury is blue, and that blue and yellow make green. That the pure salt is yellow, it is hoped will be established by the facts here given and the specimens which accompany this paper.

Nos. 1–5 inclusive are specimens purchased in market, and are shown to illustrate the unequal results of the usual methods of manufacture. Analyses accompany each, and it will be seen that the greenish color is exactly in proportion to the amount of free mercury present, and that the nearer the salt approaches purity the more yellow it becomes. No. 1, with sixteen per cent of free mercury, is a dark olive-green, and No. 4, with only three per cent, is almost a pure yellow. No. 5 contains eight per cent of free mercury and ten per cent of red iodide. Nos. 6 to 10 are all pure mercurous iodides, as shown by analyses, prepared in different ways, and it will be observed that the yellow color is uniform throughout. No. 6 was made by precipitating a solution of mercurous nitrate with potassium iodide; No. 7 by the reduction of mercuric iodide with hypophosphorous acid; No. 8 by adding to a solution of mercurous nitrate a solution of potassium iodide, to which iodine had been added; No. 9 by the addition of alcoholic solution of iodine to a solution of mercurous nitrate; and No. 10 by the U. S. P. method, using a little excess of iodine towards the close to insure the absence of free mercury. Nos. 8 and 9 will be referred to again further on. In all these cases the products are similar, not only in color, but in chemical composition, as shown by analyses, all of them being pure mercurous iodide.

In Watt's "Dictionary of Chemistry," the U. S. Dispensatory, and other works, is described an iodide intermediate between mercurous and mercuric iodides, having the composition Hg_2I_3, called mercuroso-mercuric iodide, and is said to have a yellow color. I have not yet succeeded in making such a compound, but am convinced that the one described by Watt is nothing but mercurous iodide. He states that mercuroso-mercuric iodide may be made by rubbing mercuric iodide with one-third as much mercury as it already contains, or by adding potassium iodide to a solution of mercurous nitrate, "not collecting the precipitate until it has acquired a yellow color," and also by adding to a solution of mercurous nitrate, some potassium iodide solution to which "half an atom of iodine has been added." A solution of mercurous nitrate was treated as directed, with the solution of iodine in potassium iodide, the latter being slowly added with constant stirring. For a time a bright yellow precipitate was produced, with colorless supernatant fluid, then the color of the precipitate began to deepen to orange, and finally, long before the mercury in solution was exhausted, the reagent was throwing down a bright scarlet powder. A second solution was treated with the same reagent until the color of the deposit was of a reddish orange, when a little of it was collected and shaken with alcohol, the color soon became bright-yellow as at first, and the alcohol, dropped into water, gave abundant evidence of red iodide, showing that the orange powder was a mixture of the red and yellow salts. Some fresh solution was then treated, not going very far with the precipitation, so as to collect some of the pure yellow salt for analysis; this, when collected and dried, was free from taste or smell, wholly volatile, and, treated with alcohol, gave no evidence of the presence of red iodide. 0.654 gramme of it was placed in a beaker with a little alcohol and a standard solution of iodine added until a slight excess of iodine was apparent, showing that it had all been converted into red iodide. Union took place almost instantly, and the amount of iodine used was 0.258 gramme, and the solution of one centigramme of the yellow salt removed all trace of free iodine. These figures, of course, indicated that it was mercurous iodide, and not Hg_2I_2; for, if the latter, 0.106 gramme of iodine should have been sufficient. One gramme of the salt was then boiled with an alkali until decomposed, and the iodine estimated with nitrate of silver; 0.715 gramme of silver oxide was obtained, again proving that the salt was HgI.

It may, at first sight, seem difficult to account for its formation under the circumstances. My theory is as follows:

$$4HgNO_3 + 2KI + I = 3HgI + 2KNO_3 + Hg(NO_3)_2$$

In other words, a part of the mercu-

* Read at the meeting of the American Pharmaceutical Association.

rous nitrate is thrown out as mercurous iodide, and the rest changed to mercuric nitrate. This, I think, is shown clearly by the fact of obtaining first yellow and then red iodide from a solution of mercurous nitrate, which, treated with potassium iodide alone, would have yielded yellow iodide to the end. The second method described by Watt was also tried with the same result, as far as the nature of the salt obtained is concerned. If to a solution of mercurous nitrate an alcoholic solution of iodine is added, precisely the same thing occurs, first yellow, then red, and the yellow, on analysis, proves to be the same as the other.

In the National Dispensatory (Stillé and Maisch), mercuroso-mercuric iodide is said to be formed when mercurous iodide is sublimed. A reddish-brown crystalline sublimate is the result of this treatment, which certainly has peculiar properties, but its composition I have not yet had time to determine.

The Purity of Commercial Cream of Tartar.*

BY GEO. W. KENNEDY.

"PHARMACISTS often have the price of cream of tartar sold by grocers held up to them as a standard of the value of this substance. What proportion of the cream of tartar sold by grocers and by druggists will conform to the U. S. P.?"

In order to answer this query satisfactorily, I obtained samples of the salt, for which I am indebted to members of this association, druggists, and grocers residing in Chicago, Cincinnati, Boston, Brooklyn, Philadelphia, Baltimore, St. Louis, Washington, Richmond, Louisville, Indianapolis, Williamsport, Pa., and Pottsville, Pa. Two samples were obtained from each of the above-named places, one from a grocery store and one from a drug store, excepting Indianapolis, from which place I received three packages—two from druggists and one from a grocer.

Before giving the results of my investigation, I would say that I am well pleased to know that but a few of the twenty-seven specimens under consideration were found to be sophisticated. They also exhibit a decided improvement as compared with a number of samples examined by the writer† in 1882, when of ten samples sold by grocers, not one was found to be pure. This year, of the fourteen samples obtained from druggists, I found but one adulterated, and that containing approximately 27 per cent of a mixture of chalk, alum, and starch. The other thirteen samples contained a small percentage of tartrate of calcium, 5 to 15 per cent of which is known to be found in cream of tartar, and is not considered an adulterant, as it cannot be removed in the process of recrystallization. Of the thirteen specimens procured from grocery stores, seven were found to be adulterated. The percentages of impurities are as follows: 20.25, 28.50, 76., 77., 78., 87.50.

Of the cream of tartar sold by druggists, one sample in fourteen was found to be adulterated, or about 7 per cent. With the grocers' samples, seven in thirteen were found to be impure, or about 50 per cent.

In searching for sulphates and chlorides, one drachm of the salt was added to one ounce of warm water, portions of the clear liquid, after being cooled, were acidulated with a few drops of nitric acid, and then tested with barium nitrate for sulphates, and with argentic nitrate for chlorides.

In testing for starch, the substance was digested in aqua ammonia (sp. gr. 0.960), and the insoluble portion then boiled with water, when a small quantity of iodine tincture was added.

The balance of the investigation was conducted as advised by Stillé and Maisch, viz., by dissolving the substance to be examined in an excess of ammonia water, in which it should be completely soluble, and the solution should not be precipitated by hydro sulphuric acid (absence of copper and iron), or by oxalate of ammonium (absence of calcium salts). If cold hydrochloric acid is added to the residue left after treatment with ammonia, the terra alba, starch, and some gypsum undissolved will remain insoluble, and effervescence will follow if chalk is present. The acid solution mixed with an excess of ammonium, or sodium acetate, should not yield white precipitates with ferric chloride (phosphates), ammonia (alumina), or carbonate of ammonium (calcium salts).

The packages obtained at drug stores, with few exceptions, were neatly tied up and labelled; the packages obtained from grocery stores, with two exceptions, were not labelled and were unsightly.

* Abstract of a Paper read at the Meeting of the Amer. Pharm. Assoc.

† Proceedings of the Pennsylvania Pharmaceutical Association, 1882, p. 144.

Antiseptics and Bacteria.

THE following data are taken from an article by P. Miguel, published in the *Annuaire de Météorologie* for 1884. The quantities represent the weights in grammes of antiseptics which prevent the putrefaction of one litre of neutralized beef broth.

	Gm.
Mercuric Iodide	0.025
Silver Iodide	0.030
Hydrogen Peroxide	0.050
Mercuric Chloride	0.070
Silver Nitrate	0.080
Osmic Acid	0.15
Chromic Acid	0.20
Chlorine	0.25
Iodine	0.25
Auric Chloride	0.25
Platinic Chloride	0.30
Hydrocyanic Acid	0.40
Bromine	0.60
Cupric Chloride	0.70
Chloroform	0.80
Cupric Sulphate	0.90
Salicylic Acid	1.00
Benzoic Acid	1.10
Potassium Cyanide	1.20
Aluminic Chloride	1.40
Zinc Chloride	1.90
Sulphuric, Nitric, Hydrochloric, and Phosphoric Acids	2.00 to 3.00
Carbolic Acid	3.00
Alum	4.50
Tannin	4.80
Arsenious Acid	6.00
Boracic Acid	7.00
Ethylic Alcohol	95.00
Sodium Hyposulphite	275.00

[This list will cause surprise in many quarters. The only criticism permissible is to cite the experiments of M. Miguel.]

Mention is made of the fact that naphthalin is powerless as an antiseptic when purified from phenol or other bodies. Even when present in such quantities that the beef broth is filled with solid pieces, the development of bacteria is not prevented.—*Mon. Scient.* and *Journ. Am. Chem. S.*

Barbadoes Aloes in St. Helena.

IN a recent report on the island of St. Helena, Mr. Morris, of the Royal Botanic Gardens, Jamaica, says:

"Another member of the aloe family, which is very abundant on the island, and capable of being largely utilized, is the Barbadoes Aloe ("Aloe Vulgaris"). It grows freely in Jamestown Valley in volcanic ash, and on barren rocks. It is fast spreading also in Ruperts Valley; and I noticed it was there used, and seemed to flourish, as a coping for a stone wall.

"This plant, so hardy and prolific, produces the aloes of medicine, and it is cultivated, especially at Barbadoes in the West Indies, solely for this purpose. It reproduces itself by means of suckers around the stem; these being removed when about six inches high are planted out on waste pieces of land, about two feet apart. When fully grown, and just before flowering, the outer and older leaves are first removed; they contain an abundance of a thick yellowish juice, which is allowed to drain into troughs leading into a large iron pot or caldron. When the pot is nearly filled, it is placed over a fire and the juice boiled until it has attained the consistency of thick glue; this, when cool, is the aloes of commerce, and it is usually exported to England in bottles or gourds.

"Barbadoes aloes, prepared in the manner above indicated, is valued in the London market at £4 to £8 per cwt. It is usually retailed by druggists at 4/6 per pound. This industry, which necessarily must be very small, might commend itself to the notice of many people, especially fishermen and others, living in the lower valleys. The plant is abundant; its cultivation, if merely putting a few suckers in the ground can be so called, is of the simplest description; and the preparation of the juice requires only a few troughs, made by nailing a couple of pieces of board at right angles to each other, and an iron pot. If some local tradesmen were to give attention to the subject, and undertake to purchase the manufactured aloes from the cultivators in small quantities, the industry would soon be placed upon a satisfactory footing."—*Pharm. Journ.*

The Separation and Estimation of Digitalin, Digitaleine, and Digitine.*

AFTER criticising the method of Nateville and the so-called German process, the author proposes to exhaust the plant with water, to filter through animal charcoal until entirely decolorized, and to precipitate the filtrate completely with lead acetate and alcoholic ammonia as long as a precipitate is produced. This last precipitate consists of lead oxide and the glucosides of digitalis. It is washed on the filter, mixed up with water to a thin paste, and completely decomposed by treatment with hydrogen sulphide. The entire mass is then placed upon a filter. The watery liquid contains all the digitaleine, whilst digitalin and digitine remain undissolved in admixture with the lead sulphide. If this residue is treated with chloroform, the digitaline is dissolved and can be obtained in crystals on evaporating the solvent. The residual lead sulphide is treated with alcohol which dissolves the digitine. This substance remains behind in a state of purity on the escape of the alcohol. The lead-precipitate of digitalin may be distinguished from those of picrotoxine and solanine as follows:

1—The precipitate of picrotoxine is more slimy, and on the addition of strong sulphuric acid becomes saffron yellow. 2—The precipitate of digitalin is gelatinus, and on treatment with sulphuric acid becomes flesh-colored or buff. 3—The precipitate of solanine is granular, and on treatment with sulphuric acid turns to a deep buff. If a little sugar is then added to the mixture, it takes, after some time, a violet color which ultimately becomes blue.—*Zeitsch. f. anal. Chem.; Chem. News.*

A pharmaceutical establishment in Berlin, founded nearly 400 years ago, has recently been sold for $300,000.

* Abstract of a paper by R. Palm.

THE

American Druggist

(NEW REMEDIES)

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XIII., No. 10. WHOLE No. 124

FRED'K A. CASTLE, M.D., - EDITOR.

CHAS. RICE, PH.D., ASSOCIATE EDITOR.

PUBLISHED BY

WM. WOOD & CO., 56 & 58 Lafayette Place, N.Y.

OCTOBER, 1884.

SUBSCRIPTION PRICE per year, ... $1.00

SINGLE COPIES, ... 10

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & Co., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed to THE EDITOR OF AMERICAN DRUGGIST, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

The AMERICAN DRUGGIST is issued on the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

ELECTROTYPES of the illustrations contained in AMERICAN DRUGGIST will be furnished for 50c. per square inch.

EDITORIAL.

ELSEWHERE in this number we publish two elaborate articles on the subject of percolation as a pharmaceutical process, and it is but recently that other papers have appeared which referred to the same subject. Altogether enough has been written, since the process first came into general use, to fill a volume of considerable size, but there may be some question as to whether a few of the recent contributions are not in the nature of finely-spun theories rather than practical observations. Each writer seems to consider his view of the subject entitled to great attention, but one cannot help feeling, after reading these extended dissertations, that it may be possible that the subject is somewhat over-written.

Thus far, but little that is worthy of note has been said about the effect of various modes of percolation upon the remedial effects of drugs, although it must be acknowledged that this is quite as important as any phase of the subject.

One of the most important additions to the literature of percolation is a circular lately received, announcing a new [?] patented percolator, which informs us that:

"In rhythmic harmony Nature's Laws unfold to the smile of Scientific Genius, as the budding flower blossoms to the sun.

"The new application of a Universal Law of Nature to the extraction of the Vital Active Medical Principles of Plants.

"A novel process, by which the most Complex Medical Virtues of Drugs are completely extracted in thirty minutes.

"Superb in its construction, grand in its achievements, unlimited in its possibilities, unrivaled, it stands alone upon the merits of Perfection.

"The most sublime Pharmaceutical Invention ever made, creating the new Sciences of Centrifugal Distillation, and Radiate Percolation.

"The majestic beauty of this perfect process elevates the Practice of Medicine from an Experimental Art to a Mathematical Science.

"Odoriferous distillation, generated by heat, is now superseded in Centrifugal Distillation, by the elastic transmission of atmospheric molecular activity.

"Extraction by former methods of parallel or convergent roads of displacement is now superseded in radiate percolation, by the scintillation of the diffusive solvent fluids to the periphery of a sphere.

"All the preparations made by the Vacuum-Press Percolator possess four times the Equivalent in Medical Activity of the same preparation made by any other known process.

"Medical herbs, roots, barks, leaves, flowers, and fruits yield, with Divine homage, their Aromatic, Vital, Curative Potencers to the magic power of the Vacuum-Press Percolator.

"We solve the mystery of ages, unravel the secrets of time, and discover the Fountain of Aqua vitæ of Oriental Sages.

"To the Scientific World:—I proclaim my discovery of Natural Law of Vacuum-Press Elastic Transmission of Normal Atmospheric Equilibrium Activity."

No one who can write to such sublime heights of eloquence when describing a mere percolator should waste his genius on such an ignoble subject, and he should, instead, invoke his muse in behalf of some poroused plaster, corn-salve, rat-exterminator, kidney cure, or remedy for hog-cholera, ere it is too late.

If the executive committee of the N. R. D. A. could announce an address by this intellectual phenomenon at their next meeting, there can be no doubt that even the first session would be packed.

WE referred in our August number to the investigation then being made by the health authorities of New York and Brooklyn, of the alleged contamination of carbonated drinks, as sold by druggists. The result, in the latter city, has been an order from Health Commissioner Raymond, prohibiting:

"The storage, keeping, selling, or having for sale of soda water or mineral water in tin-washed copper fountains or vessels.

"The storage, keeping, selling, or having for sale of soda water, mineral water, syrups, or flavoring extracts in vessels composed in whole or in part of copper, lead, or other poisonous substance, in which the soda water, mineral water, syrup, or flavoring extracts come in contact with the copper, lead, or other poisonous substance.

"The selling, delivering, or draughting of soda water, mineral water, syrups, or flavoring extracts through pipes, faucets, or taps composed in whole or part of copper, lead, or other poisonous substances, unless such pipes, faucets, or taps are so lined, coated, or protected that the soda water, mineral water, syrup, or flavoring extracts cannot come in contact with the copper, lead, or other poisonous substance composing the same."

It is stated, moreover, that the chemist of the Brooklyn Health Department found that in fifty-five leading drug stores, the syrups in eight, and the soda or mineral waters in seventeen, contained copper in harmful quantities. "All the tin-washed copper fountains," says the *N. Y. Daily Tribune*, "had copper in the soda."

Newspaper reporters are not always well informed of matters upon which they express themselves, and we are disposed to be somewhat incredulous as to the harmful proportion of the copper discovered.

It is not long since a discussion took place in English and French scientific journals about the harmful effects following the consumption of canned peas to which a copper salt had been intentionally added for the purpose of heightening their green color. One eminent member of the French Academy went so far, in his desire to protect a local industry, as to claim that the presence of the copper-salt, instead of being harmful, rather improved the quality of the peas as a food. It is possible that his views of the question were somewhat influenced by the local prejudice, but in the case of our readers whose carbonated drinks are found to contain this metallic ingredient, the sympathies of the public are strongly in the other direction; and unless it is desired that the profits from the sale of "soda" shall follow those generally derived from "patents," the sooner efforts are made to assure the public of the purity of all waters and syrups sold, the better for the business generally.

Every pharmacist has at hand the means for ascertaining the presence of even a trace of copper in the waters and syrups dispensed by him. So long as circumstances influence his use of tin-lined copper retainers and draught apparatus, he should assure himself of the wholesomeness of his beverages.

A HOLIDAY number of the AMERICAN DRUGGIST is to be issued in November, on which special pains will be taken to render it attractive to the retail trade. Like the first number of this volume, it will be sent to the entire drug-trade of the United States, and it is intended to make it of sufficient importance, in this and other ways, to be unusually desirable for advertisers. Already much of the advertising space has been taken, and those who wish to avail themselves of the opportunity for reaching the retail pharmacists should address the publishers of the journal without delay.

OUR readers will be pained to learn of the ill health of Mr. Henry B. Parsons, formerly on the editorial staff of this journal, and who quite recently became the editor of the *Druggist's Circular*. During his service as one of the chemists of the Department of Agriculture, in Washington, and since then as the chemist in charge of W. H. Schieffelin & Co.'s laboratory in this city, he has doubtless over-taxed his strength at a time of life when pulmonary disease is most likely to be developed. An attack of hemorrhage occurred during his attendance at the meeting of the American Pharmaceutical Association, in Milwaukee, which may disable him for active work for a time, but it is certainly the hope of every one who knows him that with rest and careful attention he may soon be restored to health. The pharmaceutical profession can ill afford to lose, even for a few weeks, the services of so valuable a worker as Mr. Parsons.

Standard Dimensions for Percolators.*

BY OSCAR OLDBERG, OF CHICAGO.

ALL the ready-made percolators obtainable in the market up to this time are absurd as to their proportions, and should be discarded as soon as percolators of proper form and dimensions can be found. They are much too short in proportion to their diameter; a glass percolator seventeen inches in length being ten inches in diameter at the top, when it ought to be about three inches. They are generally of very irregular form, and instead of being very slightly conical, they are either perfectly cylindrical or as tapering as a sugar loaf. In most of them the tops are so irregular that they cannot be covered tightly when desired. Their stems are badly shaped and of too small bore, so that it is frequently difficult and sometimes impossible to insert the cork.

The object of this paper is to present in a concise manner the practical lessons taught in our extensive literature on percolation, so far as relates to the apparatus, and to suggest how we may utilize these lessons. I propose to summarize the conclusions to be derived from the able and exhaustive studies of Dr. Squibb, Professors Diehl, Lloyd, Remington, and others, which agree with my own experience. There will be nothing new, therefore, in the propositions here submitted; but I feel that a service will be performed by placing them together so that they may be reviewed with ease:

1. Simple percolation is on the whole the best form in the hands of pharmacists operating on a small or moderate scale, being easier and safer, and yielding, when the official directions are followed, more uniform results. Re-percolations or fractional percolation can be profitably carried out only on a comparatively large manufac turing scale. Simple percolation is accordingly the process to which preference has been given in the Pharmacopœia of the United States of America.

2. Simple percolators, when properly constructed and used, are decidedly preferable to any patent apparatus with which I am acquainted, both in point of economy and efficiency.

3. Tall and narrow percolators—considerably taller in proportion to their diameter than any heretofore obtainable in the market—are necessary to insure the proper exhaustion of the drug with a moderate quantity of menstruum, simple percolation being the process followed.

4. As the sole object of using a tall and narrow percolator is to increase the height of the column of drug and menstruum in proportion to their mass, it is evident that, in using any percolator, it is necessary to pack it as nearly full as practicable, leaving only just enough space at the top to enable the adding of menstruum as required.

To use a tall and narrow percolator, packing it only half full, is of course equivalent to using a short percolator.

5. It is, therefore, an imperative rule that, instead of making a certain fixed quantity of fluid extract, or tincture, or other percolate, without sufficient regard to the size of the apparatus available for the operation, we must invariably adjust the quantity of drug to suit the percolator. Thus, if the percolator is large enough for seventeen or eighteen troy ounces, it is wrong to put only sixteen troy ounces in it.

6. From these conclusions it follows, further that a sufficient variety of sizes of percolators must be found in the shop or laboratory of every pharmacist who has the commendable ambition to make his own fluid extracts and tinctures. For each percolate he wishes to make, he must have a percolator large enough to obviate any necessity for using it too many times in order to obtain a sufficient quantity of product, and at the same time sufficiently small to enable him to fill it without obtaining a greater quantity of product than he can use.

7. There are not now in the market any percolators which reasonably fulfil the requirements necessary to enable the pharmacist to conveniently carry out the official directions for percolation under circumstances favorable to satisfactory results.

These considerations led me to adopt a set of fixed dimensions for percolators, such as are in my opinion most suitable for general use in the preparation of fluid extracts and other preparations in accordance with the excellent details of manipulation given in the latest revision of the Pharmacopœia of the United States (pages xxxvi. and xxxvii.). These dimensions have been adopted by the Chicago College of Pharmacy for the percolators to be used in its new pharmaceutical laboratory, and are herewith presented in tabular form.

STANDARD PERCOLATORS OF THE CHICAGO COLLEGE OF PHARMACY.

SIZES.	APPROXIMATE CAPACITY.		LENGTH OF BODY.		INTERNAL DIAMETER AT THE TOP.		INTERNAL DIAMETER OF BODY AT THE SHOULDER.		DEPTH OF SHOULDER.		LENGTH OF STEM (OR NECK.)		INTERNAL DIAMETER OF STEM AT THE THROAT.		INTERNAL DIAMETER OF STEM AT MOUTH OR EXIT.		LENGTH OF RUBBER TUBE.	
	C.c.	U. S. fl. meas'r.	Millimeters.	Inches.	Millimeters.	Inches.	Millimeters.	Inches	Millimeters.	Inches.	Millimeters.	Inches.	Millimeters.	Inches.	Millimeters.	Inches.	Millimeters.	Inches.
1	90	3 fl oz	150	5.09	30	1.181	25	.984	4	.157	30	1.181	10	.394	12	.472	200	7.87
2	150	5 "	180	7.09	36	1.417	30	1.181	6	.236	30	1.181	10	.394	12	.472	240	9.45
3	240	8 "	210	8.27	42	1.654	35	1.378	8	.315	30	1.181	10	.394	12	.472	280	11.02
4	360	12 "	240	9.45	48	1.890	40	1.575	10	.394	30	1.181	10	.394	12	.472	320	12.60
5	530	18 "	270	10.63	54	2.126	45	1.772	12	.472	35	1.378	13	.512	15	.591	360	14.17
6	740	25 "	300	11.81	60	2.362	50	1.968	14	.551	35	1.378	13	.512	15	.591	400	15.75
7	1,240	42 "	360	14.17	72	2.835	60	2.362	16	.630	35	1.378	13	.512	15	.591	480	18.89
8	1,960	66 "	420	16.53	84	3.307	70	2.765	18	.709	35	1.378	13	.512	15	.591	560	22.05
9	3,000	100 "	480	18.89	96	3.780	80	3.150	20	.787	35	1.378	13	.512	15	.591	640	25.20
10	3,780	8 pts.	540	21.25	108	4.252	90	3.543	22	.866	35	1.378	13	.512	15	.591	720	28.35
11	5,700	12 "	600	23.62	120	4.724	100	3.937	24	.945	35	1.378	13	.512	15	.591	800	31.50
12	7,600	16 "	660	25.98	132	5.197	110	4.331	26	1.024	35	1.378	13	.512	15	.591	880	34.65
13	9,850	21 "	720	28.35	144	5.670	120	4.724	28	1.102	35	1.378	13	.512	15	.591	960	37.80
14	12,500	26 "	780	30.71	156	6.132	130	5.118	30	1.181	35	1.378	13	.512	15	.591	1040	40.95

That the best proportions for practical work, all things considered, cannot be determined with exactness, is obvious. I believe, however, that the dimensions adopted by the Chicago College of Pharmacy will be found as nearly right as it is practicable to make them. The percolators are tall and narrow enough to insure very satisfactory results, and not so tall as to be awkward.

Messrs. Whitall, Tatum & Co. are making the percolators for the Chicago College of Pharmacy, and on my recommendation they decided to place this style of percolators on their catalogue, and will have them in stock, made exactly according to these patterns, at an early day. It is to be hoped that other manufacturers of glass percolators will also make them.

The cut represents one of these percolators ready for use. The only additional implements required are a proper stand to firmly support the percolator in position; a wooden plunger made of a circular disk of hard wood fixed on the end of a piece of broom stick; a piece of sheet rubber (⅛ inch thick), or a piece of plate glass, or of wood, to be used as a cover; a receiving bottle, and a few blocks of wood with which to raise or lower the receiving bottle to regulate the rate of flow during the percolation as indicated on page xxxvii. of the Pharmacopœia.

A perforated rubber stopple, 25 millimeters (1 inch) long, slightly tapering, and of the right diameter to fit the stem of the percolator, is better than an ordinary cork for carrying the exit tube to be inserted in the stem. The glass tubing used should be of about 6 millimeters (¼ inch) external, and 3 millimeters (⅛ inch) internal diameter. The exit tube should be 5 centimeters (2 inches) long, thus protruding 25 millimeters (1 inch) beyond the larger or or outer end of the rubber stopple or cork, the other end of this tube being flush with the smaller end of the cork. The rubber tube should be 5 millimeters (¼ inch) internal diameter. The drop tube (glass) at the further end of the rubber tube may be the same length as the exit tube (5 centimeters). These dimensions of cork and tubing will answer for any size of percolator. The length of the rubber tube, however, must be nearly one-third greater than the height of the percolator in each case respectively.

It will be observed that the total depth of each percolator is uniformly five times its large diameter, and six times its small diameter. These percolators are, therefore, very near cylindrical.

The tops are ground off and thus capable of being tightly covered.

The stem is a regular tincture bottle neck, with the internal diameter greater at the mouth than at the throat, thus admitting insertion of the rubber stopple or cork from without instead of from within. In the old percolators, the stem or neck is wider above than below, and hence the Pharmacopœia directs that the cork be inserted from within, which is very inconvenient.

The stem of the new percolators is long enough to properly accommodate the plug of loose cotton to be inserted over the cork. "Absorbent cotton," or any clean, dry, loose cotton, will answer. The sand used must be very coarse, all the fine dust having been sifted and washed out of it, and must be perfectly dry when used. The layer of sand should not be too thick.

Conical percolators are in my experience not required for any drug. The new percolators proposed are sufficient for all purposes, provided the general official directions are followed with a reasonable amount of intelligence and discretion. It is important that the moistened drug shall be permitted to remain loosely shaken together in the

* Read at the meeting of the American Pharm. Assoc.

percolator sufficiently long to become thoroughly permeated by the moisture before being packed, and that the subsequent packing be done with care and with the requisite degree of relative firmness. The packed mass pushes upward when swelling takes place, and when a conical percolator is used the consequence is that a space is formed all around between the drug and the inner surface of the percolator, necessitating constant watching and mending. This evil is largely avoided in cylindrical percolators.

Each pharmacist who desires to use these new percolators will of course select those sizes only which he deems necessary for the requirements of his own business; but it is scarcely probable that any large pharmaceutical establishment, where fluid extracts and tinctures are constantly being made, can get along with a less extensive assortment than numbers 2 to 13, inclusive. Size No. 1 is intended chiefly for experimental work. It is suggested to those who might consider the entire set too expensive, that one-half the set, consisting of either the even or the uneven numbers, will probably prove more useful than a less equally graded assortment. I believe, however, that the saving in labor and material will more than compensate for the expense of a whole set of these percolators. My understanding is that they will be sold singly as well as in sets, so that any purchaser can get just what he wants. I believe they will be sold at as low prices as the laws of supply and demand may dictate, as no one has any proprietary or exclusive right in either their manufacture or sale.

Simultaneous Fractional Percolation.*

BY C. S. HALLBERG, CHICAGO.

THE extraction of drugs as practised in percolation plays an important part in modern pharmaceutic practice. The favor fluid extracts have met with since their introduction has been the cause of largely increasing the number of drugs desired in this form, until, no doubt, before long the officinal list will embrace nearly all the vegetable remedies. The investigations of various experimenters, such as Squibb, Lloyd, and Diehl, have greatly advanced our knowledge regarding these preparations since the first processes devised by Proctor, or that of Campbell upon which the formulas in the U. S. P., 1870, were constructed.

It has been shown that extraction is accomplished with less volume inversely in proportion to the height of the column of the drug operated upon which discovery was of the greatest importance, since it facilitates extraction, with the least amount of menstruum. It has also been demonstrated that the process of the U. S. P., 1870 was radically faulty, and that the preparations were prone to precipitation, owing to the admixture of an aqueous extract with the alcoholic reserved percolate.

In the process for fluid extracts of the U. S. P., 1880, this has been, to a great extent, avoided by the evaporation of the weak percolate to a soft extract previous to admixture with the reserved percolate, and the subsequent restoration of the original alcoholic strength of the fluid extract by the addition of more of the menstruum.

If I do not misunderstand the theory herein involved, I am of the opinion that less danger of precipitation would be incurred, solution more quickly accomplished, and therefore the fluid extract finished with greater expedition, if the extract obtained by concentrating the weaker percolate were dissolved in the original menstruum, previous to admixture with the reserved percolate. In a properly conducted percolation of such drugs as contain a large percentage of extractive (notably rhubarb, taraxacum, etc.), the menstruum in the reserved percolate holds suspended or in solution as much soluble matter as it will permanently retain. Upon the addition, therefore, of more soluble matter, its dissolving power is taxed to its utmost, the alcoholic strength of the whole in addition is slightly reduced—causes which operate to affect unfavorably the permanency of the solution. Since it has been noticed that, in preparing fluid extracts of some drugs like the above-mentioned, the extract is not dissolved in the reserved percolate until its required volume is reached by the addition of more menstruum, no practicable advantage is gained by the procedure in the official process. On the other hand, the extract readily dissolves in the menstruum with which it was originally extracted, and precipitation is avoided in the admixture, when the alcoholic strength of the liquids is the same.

In fractional or re-percolation, the chance for precipitation of the extract is avoided, so far as immunity may depend upon retaining the original alcoholic strength of the menstruum. Although precipitation does frequently take place when this method has been used, it is caused by the inability of the menstruum to hold the extracted matter permanently in solution. It has been observed that the inert matter of a drug is sometimes extracted along with the active principles, and that a gradual precipitation of the more or less indifferent constituents subsequently results. It has also been found that, while such menstrua are undesirable for physical reasons, they are at the same time more effective in dissolving the active principles and insure a more complete exhaustion than when menstrua, chosen for their capacity of suspending all the extracted matter, are employed.

As an illustration serving to prove the correctness of this observation, we may mention fluid extract of ergot. According to the best authorities, as well as my own experience with the drug, the alcoholic strength of the menstruum for fluid extract of ergot should not exceed 40 per cent; as all the desirable active principles of the drug are soluble therein, wheras the solubility of part of the medicinal constituents is modified in alcohol above this strength. On the other hand, the preparation made with 40 per cent alcohol will, after a short time, show signs of precipitation which will continue for a period of about three months. This precipitate will be found to consist of a modified form of the fixed oil which, having been extracted along with the active matter, is, subsequently (owing probably to resinification caused by the watery menstruum), gradually rendered insoluble. When the officinal menstruum is used, as complete extraction is not obtained as by the 40-per-cent alcohol, but the oil, present perhaps in even greater proportion, is scarcely precipitated at all, owing to the greater alcohol strength of the fluid extract. It will thus be seen that, while the weaker menstruum is the best solvent for the active principles, it does not answer as well for keeping all the suspended matter permanently in solution. When the precipitated matter is of such character that by its rejectment the preparation is improved, then the best solvent should be used for extraction, irrespective of any subsequent precipitation. Unfortunately, however, owing to our limited knowledge of the chemical constituents of the vast majority of drugs, as well as imperfectly established therapeutic facts, this course of procedure, while plainly desirable, is, in practice, inadmissible. In the present instance, the complete exhaustion of the drug is considered of greater importance than transparency in the preparation. Nevertheless, to secure elegance, as well as efficiency, fluid extract of ergot is made with 40 per cent alcohol, and the preparation allowed to remain undisturbed until precipitation has ceased, when the clear liquid is decanted and filtered.

In the adoption of repercolation as an alternate process in the U. S. P., 1880, the committee on revision were, no doubt, aware that this method, in its present form, cannot be applied practically to the extraction of drugs in smaller quantities. This has been the great drawback to its more general employment. Since, however, this method of extraction originated with or, we may say, was almost forced upon operators on a large scale, it will be seen that to make it of equal value in small operations is, therefore, an impossibility, unless modified accordingly. The earliest account of this manner of extraction is noticed in the manufacture of quinine and other alkaloids, where large quantities of drugs are operated upon and where successive macerations are effected, entailing the use of a vast amount of solvent, and where the reduction in bulk of the liquid, so as to be nearly as possible a saturated solution, is a desideratum the achievement of which is regarded from an economic as well as rational standpoint. In applying this process to a small operation in pharmacy, the very feature which renders its employment desirable in operations of greater magnitude still remains, namely, the extended period required for bringing the process to a close. As this item of time is of as much moment in the practice of pharmacy as in any other art or profession, it must be taken in consideration, lest the advantages gained by the employment of the process are more than counterbalanced by the expense. As a volume for weight extraction (without entailing subsequent condensation) is the most desirable process for fluid extracts, its employment should be universally adopted in small as well as large operations, provided that in its application the time expended is not greater than by the more simple processes. With this end in view, a modification of this process is offered, of which the following is an outline.

Divide 100 parts of the drug to be extracted in three or four equal portions. Moisten each portion uniformly with from 20 to 40 per cent of the menstruum, according to the bulk of the drug and its fineness. Pack each portion separately in a cylindrical percolator according to the general directions for preparing fluid extracts in the U. S. P. 1880, and designate each portion respectively Nos. 1, 2, 3, and 4. (When practical, better extraction is accomplished in 4 portions than in 3.) Pour the remaining menstruum gradually upon No. 1 until it begins to drop, when the orifice is closed and left to macerate for 12 to 24 hours.

Percolation is then proceeded with according to the official directions as to rate of speed in dropping, the remaining menstruum being meanwhile poured upon the drug, and subsequently so much more of a mixture of the same alcoholic strength, or, perhaps, somewhat lower, as to displace the amount of menstruum originally used on portion No. 1. The percolate is reserved in portions of from 20 to 40 per cent of the amount of drug in No. 1, according to the proportion required to moisten it with. Thus, for example, of cubeb, ergot, or ginger and drugs of similar density, it has been found that 20 per cent of menstruum is sufficient to moisten with, and the amount of percolate reserved, therefore, from this class would be 20 per cent of one-fourth

* Read at the meeting of the Amer. Pharm. Assoc., at Milwaukee, Aug., 1884.

of the original 100 parts taken, namely 5 parts, volume for weight.

In a class of drugs which are twice as bulky as those just mentioned we find arnica, buchu, senna, and most leaves and flowers. These require 40 per cent of menstruum for moistening, and the percolates reserved from part No. 1 should therefore be of this volume, or twice that of the first mentioned class, namely 10 parts. Intermediate between these two classes we find a smaller number of drugs, mostly barks, such as cascara sagrada and a few rhizomes, *i. e.*, glycyrrhiza and sarsaparilla. This exceptional class is quite limited in numbers, and by far the largest portion of drugs belong to either of the two extremes above noticed, which may be represented as being of a volume 1.50 and 3.00 compared to water at 1.00. Thus, practically, one pound of podophyllum, nux vomica, or ergot will occupy the same space as one and a half pints of water, while one pound of arnica, buchu, or senna fill a volume equivalent to three pints of water. These proportions of volume in crude drugs are, of course, only approximate, and they are influenced more or less by the degree of fineness of the powder and other causes inherent to their physical condition.

Sufficient attention has not been paid to the volume of crude drugs, as with a better understanding of this relation. extraction is greatly simplified. Observation has led to the belief that the soluble constituents of a drug remain, to a great extent, constant in the first portion of menstruum used; that the extract is kept in solution and not influenced by gravity. If proper menstrua are chosen, the extract is kept permanently in solution in the finished preparation; why, then, should gravity cause it to descend during the process or extraction? That the pressure of the superior liquid and the hydrostatic force where the drug occupies a high column are the only agents to be taken in consideration in the process of displacement, is easily believed. Upon this theory, therefore, it is sought to reserve each successive portion of solvent in contact with the whole column of the drug as it is displaced by the remainder of the menstruum.

Consequently each volume of percolate, representing the portion used in moistening, is kept separate until the whole amount of the menstruum originally used is obtained. So far apparently nothing has been gained in circumventing the tedious and time-consuming process of fractional percolation, may be said! *Everything* has been gained—time.

While the extraction is being accomplished in No. 1, maceration is proceeding in the other parts, Nos. 2, 3, and 4. The first percolate from No. 1 is reserved, while the succeeding portions of 5 parts each are successively poured upon No. 2.

Percolation may be at once proceeded with as soon as sufficient parts have been obtained to keep the surface of the drugs in the percolator covered, maceration having been already effected. The first 5 parts of percolate from No. 2 are added to the reserved 5 parts from No. 1 and the successive portions obtained poured upon No. 3, from which the first 5 parts obtained are added to those of Nos. 1 and 2. Percolation is proceeded with in No. 3 in the same manner as in the former numbers, alcohol of the same strength as the menstruum being used for displacement. As will be seen, 85 parts of the original menstruum now remain for the extraction of No. 4, containing 25 parts of the drug. If the process so far has been carefully conducted the complete exhaustion of the drug with such a large portion of menstruum is readily accomplished.

In a record of extractions by this method, kept for one year, it has been found that exhaustion is better effected by stronger alcoholic menstrua; that in drugs whose constituents are most soluble in stronger alcohol (80 to 94 per cent) than in those where diluted alcohol or still weaker menstrua containing glycerin are indicated. It is not claimed that for this reason stronger alcoholic menstrua should be indiscriminately employed, but attention is called to the fact that resinous drugs such as cimicifuga, podophyllum, etc., are more easily exhausted, volume for weight, than drugs containing more extractive soluble in water upon which the medicinal value depends, and for which, therefore, weaker alcoholic menstrua are directed to be used.

By determining the percentage of extractive in the various percolates obtained during the progress of percolation it was thought that possibly an estimate could be made of the rate of extraction in the different parts. While the percentage of extractive matter obtained from a few drugs such as glycyrrhiza, rhubarb, etc., may be a fair basis upon which to judge of the relative strength of the percolate to the crude drug, it is considered doubtful whether or not in the larger portion of drugs the comparative strength of a percolate can be determined by such a purely pharmaceutical method.

In continuing the percolation with alcohol of the same strength as the original menstrua after the required volume of fluid extract had been obtained, the percentages of extractive matter contained in the weak percolates have been found to represent from 5 to 10, and in exceptional cases nearly twenty per cent of the drug. Upon examination, however, these extractives were mostly devoid of medicinal value, and therefore did not represent the amount of crude drug which their percentage relation to the same had indicated. The following extraction will serve as an illustration of this:

100 parts of aconite were extracted by simultaneous fractional percolation. After 100 parts by volume had been obtained and reserved as nearly fluid extract, the extraction was continued with the same menstruum until practically complete exhaustion, which was effected with the use of 100 parts of solvent. The percentage of extractive was determined in each successive 20 portions as follows:

No. 1, percolate, 5 per cent.
No. 2, percolate, 4 " "
No. 3, percolate, 3 " "
No. 4, percolate, 2 " "
No. 5, percolate, 2 " "

As will be seen, this is an average of 3 per cent of extractive, representing nearly 25 per cent of the drug. This large proportion is to some extent accounted for by the fact that 90 per cent alcohol was used for the last extraction, while the original official menstruum was 94 per cent alcohol.

Upon examination these various portions of extractives proved to be medicinally nearly inert. None responded to the physical test for aconite, so prominent in even the poorest of specimens of aconite root.

Solutions of these extracts, in acidulated water, titrated with iodhydrargyrate of potassium, showed the presence of alkaloids, but in such small proportions as to have no pharmaceutical significance.

In conclusion, therefore, it is believed, that in the process here presented, with the use of effective menstrua, extraction may be accomplished with the best of pharmaceutical results, and within a reasonable period of time.

Valuation of Gelatin.

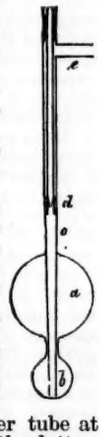
F. PROLLIUS has determined the amount of ash, water, and insoluble matter (residue insoluble in hot water) in various kinds of gelatin. To ascertain the gelatinizing property, one part of the sample was dissolved in ninety parts of water, filtered, and the degree of viscosity determined.

	Ash, per cent.	Water, per cent.	Insoluble, per cent.	Time required for the solut'n to run out. Seconds.
Astracan, from Schmidt and Dihlman, Stuttgart	0.20	16 0	2.8	507
Ditto, from a collection	0.37	18.0	0.7	485
Ditto, fine iridescent Russian quality, Tubingen collection	1.20	17.0	1.0	500
Ditto, Russian, from Gehe of Dresden	0 80	19.0	3.0	491
Ditto, in laminæ, from Gehe	0.50	19.0	0.4	480
Ditto, in threads, known as Hamburg Threads	0.40	17.0	1.3	477
Hamburg isinglass	1.30	19.0	2.3	470
Another quality	0.13	19.0	5.2	...
Rolled Northern fish bladder	3.20	1.5	10.8	467
Icelandish bladder	0.60	17.0	21.6	463
Indian isinglass	0.78	18.0	8.6	437
Yellow, quality unknown	2.30	17.0	15.6	360

To judge of the purity of isinglass, it is also recommended to subject the sample to microscopic examination.—*Dingl. Pol. J.* and *Journ. Chem. Soc.*

THERMOREGULATOR.

V. H. VELEY has constructed a thermoregulator for keeping up an equal temperature by means of regulating the supply of gas burned under a water-bath or other apparatus. It consists of two globes, *a* and *b*. The larger of these (*a*) is filled with olive oil, the smaller one (*b*) with mercury. The tube *c* is fused into the neck of the larger globe and closes the latter completely. When the olive oil expands by the action of heat, some of it is forced down into the globe containing the mercury, and a portion of the latter is driven up the tube, where it arrests the flow of gas (which enters at *e*, passes down to *d*, and enters the internal tube which carries it to the burner) as soon as it closes the orifice of the inner tube at *d*. Just below the point of the latter, the caliber of the outer tube is reduced by the insertion of a piece of short glass tubing, *d*, which serves to make the upper part of the column of mercury less in diameter and permits a finer adjustment of temperature.



"Antipyrine," a new Antipyretic.*

SINCE I published my first paper on the effects of *kairine*, I have been enabled, through the aid of several friendly chemists, to make more extended pharmacological experiments on several groups of derivatives of quinoline and other bodies nearly related to it.

Among the substances examined by me, there is one which appears to deserve, in a high degree, an exhaustive clinical investigation. This substance is a new synthetical alkaloid, discovered by Dr. Ludwig Knorr, Assistant at the Chemical Laboratory of this University. It has a strong antipyretic effect which sets in gradually and, under proper administration, lasts from 5 to 18 hours, passing off by slow degrees. This circumstance, and the fact that in most cases no disagreeable side-effects were noticed in the patient, induces us to invite clinicists and directors of the larger hospitals to subject this body to a thorough study, in order to ascertain whether it is suitable in actual practice.

Dr. Knorr has given the name *Antipyrine* to the substance; its chemical constitution and relation to other bodies will shortly be communicated through the proper channels.

* Translation of reprint from the *Zeitschr. f. Klin. Med.*, VII., No. 6. By Prof. Dr. Wilhelm Filehne, of Erlangen.

Antipyrine appears in form of a white, crystalline powder. It is very easily soluble in water, and has a very faint taste, which may readily be masked by aromatic water, wine, etc., but which is not decided enough to require a disguise at all. As it is so very soluble, the comparatively large doses in which it must be administered will be no inconvenience.

Aside from experiments on animals, and the first trials made by myself upon different persons, I have on record the observations of about 100 trial-days, with very exact notices of temperature, etc., made in different acute or chronic febrile diseases. These observations were made in the public hospitals of Nuremberg and Moabit (Berlin), the directors of which, Drs. Merkel and Guttmann, willingly complied with my request to give the new drug a trial. Dr. Wiesner, of the Heilige-Geist Hospital at Frankfort-on-the Main, obliged me in the same manner.

According to our experiments, the temperature of the body may be reduced, in most cases, by means of antipyrine, by giving it in doses of 5 to 6 gm. (75 to 90 grains), to be administered in three-hourly intervals—best so that 2 gm. (30 grains) are given first, then again 2 gm. (30 grs.), and lastly 1 or 2 gm. (15-30 grs.). Even very high fever temperatures may be reduced to about 38° C. (100.4° F.). No disagreeable concomitant effects are experienced, except that vomiting occurs in a few cases. The effect is of different duration in different patients. It lasts generally from 7 to 9 hours; sometimes it requires 18 to 20 hours from the time the effects are noticed until the temperature begins to gradually rise again. The commencement of the effect is *never accompanied by febrile chill.* Even the termination, which is generally unaccompanied by sweat, is quite gradual: one hour after the first dose (which should be 2 gm.=30 grains, or even 2.5 gm.=38 grains), the effect of the drug is still feeble, but is well developed after 1½ to 2 hours, and if the doses be administered as above recommended, it reaches its height in 3, 4, or 5 hours.

In children, one-half to two-thirds of the adult dose is sufficient; the same reduced dose will be advisable in the case of consumptives and emaciated persons generally.

The pulse is reduced with the temperature, though not in uniform proportion, particularly towards the termination.

The urine, if previously normal, shows no albumen and no marked change in color.

The preceding hints will be sufficient for those who wish to test the drug further. Though future study may show a different dose or method of administration to be more suitable, I would advise, at least in the first trials, doses of 2 or 1 gm. (30 to 15 grains) in adults, and 1 to 0.5 gm. (15 to 8 grains) in children. It should be weighed out as powder and each powder dissolved, at the time of administration, in water (pure or flavored) or in wine. Splitting up the doses in smaller fractions appears to be less effective and less economical; larger doses at several short intervals seems to be best. The least advisable method is to give it in a single large dose, as this sometimes causes vomiting.

Superintendents of hospitals and clinicists who are willing to submit *antipyrine* to a thorough study, will be supplied with a sufficient quantity by the firm Meister, Lucius & Brüning, in Höchst on the Main (the well-known manufacturers of coal-tar colors). For the present it will not be put on the market. [Antipyrine may be had from the agents of the manufacturers, Messrs. Lutz & Movius, of New York, or any wholesale drug-house.—ED. A. D.]

On Kephir.*

THE inhabitants of the Caucasus prepare kephir—both the beverage and the ferment—from sheeps' or goats' milk, in peculiar leather sacks ("burdinks") by means of a certain granular ferment.

This ferment, also called kephir, is of very ancient date, and nothing is now known of its origin. However this may have been, the grains are in existence and not only is new milk partly peptonized and fermented by them, but at the same time new kephir-granules form in the altered milk and thus present an undying series of generations. The alterations produced in the milk by the ferment, and the manner in which the new kephir is generated is not yet understood, but a chemical analysis of the kephir-grains has shown them to be composed of:

Water	11.21
Fat	3.99
Peptone-like substance soluble in water	10.98
Protein substance, soluble in ammonia	10.32
soluble in potash	30.39
Insoluble residue	33.11
	100.

The insoluble residue, after being soaked in dilute potash solution, is found to consist of the bacterium "Dispora caucasica" originally described by Ed. Kern, mixed with some other, undoubtedly accidental bacterial forms.

Hence it may be concluded that the thirty-three per cent of ferment bodies constitute the only active part of the granules.

Milk which has been fermented in bottles, by means of this kephir, is found to contain but little alcohol after twenty-four hours, and likewise but a small amount of carbonic acid gas. After forty-eight hours these are present in larger quantities, and in still greater ones after seventy-two hours.

If one each of these lots be examined, it will be found that they all contain nearly the same amount of casein. The solution of the casein from one day's kephir deposits only traces of a precipitate, that of two days' kephir yields 0.05%, and that of three days' 0.22%, all of which when ignited scarcely leave any ash. Under the microscope, these residues are seen to consist of ferment-fungi, entirely free from bacteria and other fungous bodies.

It may therefore be concluded that the peculiar ferment-fungus (Saccharomyces mycoderma; Mycoderma cerevisiæ et vini) causes the fermentation of milk by its development, while the bacteria "Dispora caucasica" play no rôle whatever in the process.

This conclusion is rendered still more evident by the fact that fermented kephir (the beverage) can turn fresh milk into kephir in the same manner as the kephir-granules.—Abstract from a paper by Heinrich Struve, of Tiflis, in *Ber. d. Deutsch. Chem. Ges.*, 1884, 1364.

* Compare NEW REMEDIES, 1883, 315.

Waterproof Varnish for Paper.

SAYS the *Photo News:* In very many cases waterproof varnishes are useful, and among their uses may be mentioned their application to laboratory labels and their use for the fixing of drawings.

There are many such varnishes, but, according to our own experience, one of the best is a thin solution of gutta-percha in benzol, and such a varnish may be made by dissolving one or two parts of fine gutta-percha foil in a hundred parts of benzol. The heat of a water bath serves to make the gutta percha dissolve tolerably quickly, but if it is necessary to have the preparation at once, the gutta percha may be dissolved in a little chloroform, and this is then mixed with the required bulk of benzol. Paper which has been coated with this varnish can be easily written, drawn, or painted upon, and it must be remembered that the gutta percha varnish does not make the paper transparent or spotted. It is known that gutta-percha slowly oxidizes in the air, and becomes converted into a brittle resin, but this oxidation product is itself a waterproofing agent.

Alcoholic solutions of resins tend to make papers more or less transparent, but the following varnish, prepared with acetone, is not subject to this drawback.

One part of dammar is dissolved in six parts of acetone, the materials being allowed to digest together for some weeks; the clear liquor is now decanted off, and mixed with its own volume of plain collodion.

Another method of making a waterproof varnish for paper consists in digesting 30 parts of white shellac with 300 parts of ether, and then agitating the solution with 15 parts of finely powdered white lead; on filtering the solution, it will be found that the white lead has been very effectual in clarifying the solution.

The above resinous varnish gives more lustre than the gutta percha varnish, but the latter gives more flexibility, a considerable advantage in many cases.

Not only silver prints, but also collotypes, and photo-mechanical impressions, may often be advantageously treated with one of the above varnishes; and it must not be forgotten that anything which protects a silver print against damp serves to diminish the tendency to fading.—*Scient. Amer.*

Remedy for Hay-fever.

DR. MORTIMER GRANVILLE sends to the *British Medical Journal* the following formula for hay-fever and hay-asthma, and remarks concerning its use:

Borax, very finely powdered	gr. xx.
Capsicum, recent, finely powdered and quickly dried*	gr. xv.
Carbonate of ammonia, finely and quickly powdered	gr. x.

Mix the borax and capsicum thoroughly, then add and mix the carbonate of ammonia.

This should be a light and pungent powder, the capsicum rising quickly with the ammonia. It must not cake and should be dry.

The effect of the remedy is at first to aggravate the trouble, but this quickly subsides, and is followed by marked relief. Begin by giving one full dose, which should be strongly snuffed up the nostrils. This will produce intense local disturbance, with sneezing, coughing, and gasping, for which nothing palliative must be done. The excitement will pass off, with a stinging sensation, in about 15 or 20 minutes, and the patient will be better, but without waiting for a return of the malady, and in spite of feeling better, he must, after the lapse of one, or at most two hours, take a second dose, thereby inducing a new paroxysm. This will not last quite so long as the previous one, though it may be as severe. A third generally, occasionally a fourth dose at intervals of three or four hours, will entirely cure the affection.

* Not Cayenne pepper.

The Keeping Qualities of Solutions of Hypobromites.

SINCE solutions of alkaline hypobromites are often used in analysis, for instance in the estimation of urea, in the titration of oils and fats, etc., etc., it will be useful to know something about their keeping qualities, though it is of course always preferable to employ freshly prepared solutions.

The reaction between caustic solid and bromine at first takes place according to the following scheme:

$$2NaHO + Br_2 = NaBrO + NaBr + H_2O$$

soda + bromine = sodium hypobromite + sodium bromite + water

After some time, however, especially after warming, the following decomposition ensues:

$$3NaBrO + 3NaBr = NaBrO_3 + 5NaBr$$

sodium hypobromite + sodium bromide = sodium bromate + sodium bromide

This is the reason why solutions of hypobromites have hitherto always been considered as unstable. It has, however, been ascertained by A. H. Allen that these solutions may be kept unaltered for a long time, and may even be heated to boiling without material change, if they contain a sufficient quantity of *free* caustic soda.

If the hypobromite solution is to be used for estimating oils and fats in *alkaline* solution, its constancy of strength is of importance. When the determinations are to be made in a solution acidified with hydrochloric acid, the constancy is immaterial, since the whole of the bromine is set free:

a. $3NaBrO + 3NaBr + 6HCl = 6NaCl + 6Br + 3H_2O$

sodium hypobromite + sodium bromide + hydrochloric acid = sodium chloride + bromine + water; and

b. $NaBrO_3 + 5NaBr + 6HCl = 6NaCl + 6Br + 3H_2O$ (as before).

Prof. Allen has made the curious observation, so far remaining unaccounted for, that in all experiments made by him, the quantity of bromine found in the solutions by actual analysis was *higher* than that which was originally added.—*Journ. Chem. Soc.* and *Dingl. Pol. Journ.*

Tin in Canned Foods.

FROM time to time, during the past twelve years, paragraphs have appeared in newspapers and other periodicals tending in effect at least to warn the public against the indiscriminate use of canned foo s. And whenever there has been any foundation in fact for such cautions, it has commonly rested on the alleged presence and harmfulness of tin in the food. At the worst, the amount of tin present has been absurdly small, affording an opportunity for one literary representative of medicine to state that before a man could be seriously affected by the tin, even if it occurred in the form of a compound of the metal, he would have to consume at a meal ten pounds of the food containing the largest amount of tin ever detected.

But the greatest proportions of tin thus referred to are, according to my experiments, far beyond those ever likely to be actually present in the food itself in the form of a compound of tin; present, that is to say, on account of the action of the fluids or juices of the food on the tin of the can. Such action and such consequent solution of the tin, and consequent admixture of a possibly assimilable compound of tin with the food, in my opinion never occurs to an extent which in relation to health has any significance whatever. The occurrence of tin, not as a compound, but as the metal itself, is, if possible, still less important.

During the last fifteen years I have frequently examined canned foods, not only with respect to the food itself as food, and to the process of canning, but with regard to the relation of the food to, or the influence, if any, of the metal of the can itself. So lately as within the past two or three months I have examined sixteen varieties of canned food for metals, with the following results:

Name of article examined.	Decimal parts of a grain of tin (or other foreign metal) present in a quarter of a lb.
Salmon	None
Lobsters	None
Oysters	0.004
Sardines	None
Lobster paste	None
Salmon paste	None
Bloater paste	0.002
Potted beef	None
Potted tongue	None
Potted Strasbourg	None
Potted ham	0.002
Luncheon tongue	0.003
Apricots	0.007
Pears	0.003
Tomatoes	0.007
Peaches	0.004

These proportions of metal are, I say, undeserving of serious notice. I question whether they represent more than the amounts of tin we periodically wear off in tin saucepans in preparing food—a month ago I found a trace of tin in water which had been boiled in a tin kettle—or the silver we wear off our forks and spoons. There can be little doubt that we annually pass through our systems a sensible amount of such metals, metallic compounds, and other substances that do not come under the denomination of food; and there is no evidence that they ever did or are ever likely to do harm or occasion us the slightest inconvenience. Harm is far more likely to come to us from noxious gases in the air we breathe than from foreign substances in the food we eat.

But whence come the much less minute amounts of tin—still harmless be it remembered—which have been stated to be occasionally present in canned foods? They come from the minute particles of metal, chipped off from the tin sheets in the operations of cutting, bending, or hammering the parts of the can, or possibly melted off in the operations necessary for the soldering together of the joints of the can. Some may, perhaps, be cut off by the knife in opening a can. At all events I not unfrequently find such minute particles of metal on carefully washing the external surfaces of a mass of meat just removed from a can or on otherwise properly treating canned food with the object of detecting such particles. The published processes for the detection of tin in canned food will not reveal more than the amounts stated in the table, or about those amounts; that is to say, a few thousandths or perhaps two or three hundredths of a grain, if this precaution be adopted. If such care be not observed, the less minute amounts may be found. I did not detect any metallic particles in the twelve samples of canned food just mentioned, but during the past few years I have occasionally found small pieces of metal, perhaps amounting in some cases to a few tenths of a grain per pound. Now and then small shot-like pieces of tin, or possibly solder, may be met with; but no one has ever found, to my knowledge, such a quantity of actual metallic tin, tinned iron, or solder as, from the point of view of health, can have any significance whatever.

The largest amount of tin I ever detected in actual solution in food was in some canned soup, containing a good deal of lemon juice. It amounted to only three-hundredths of a grain in a half pint of the soup as sent to table. Now Christison says, that quantities of 18 to 44 grains of the very soluble chloride of tin were required to kill dogs in from one to four days. Orfila says that several persons on one occasion dressed their dinner with chloride of tin, mistaking it for salt. One person would thus take not less than 20 to 30 grains of this soluble compound of tin. Yet only a little gastric and bowel disturbance followed, and from this all recovered in a few days. Pereira says that the dose of chloride of tin as an antispasmodic and stimulant is from $\frac{1}{16}$ to $\frac{1}{4}$ a grain, repeated two or three times daily. Probably no article of canned food, not even the most acid fruit, if in a condition in which it can be eaten, has ever contained, in an ordinary table portion, as much of a soluble salt of tin as would amount to a harmless or useful medicinal dose.

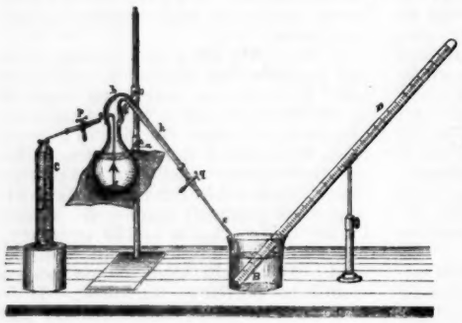
Food as acid as, say, ordinary pickles would dissolve tin. Some manufacturers once proposed using tin stoppers to their bottles of pickles. But the tin was slowly dissolved by the acid of the vinegar. These pickles, however, had a distinctly nasty "metallic" flavor. The idea was abandoned. Probably any article of food containing enough tin to disagree with the system would be too nasty to eat. Purchasers of food may rest assured that the action taken by this firm would be that usually followed. It is not to the interest of manufacturers or other venders to offend the senses of purchasers, still less to do them actual harm, even if no higher motive comes into force.

In the early days of canning, it is just possible that the use of "spirits of salt" in soldering may have resulted in the presence of a little stannous, plumbous, or other chloride in canned food; but such a fault would soon be detected and corrected, and as a matter of fact, resin soldering is to my knowledge more generally employed—indeed for anything I know to the contrary, is exclusively employed—in canning food. Any resin that gained access would be perfectly harmless. It is just possible, also, that formerly the tin itself may have contained lead, but I have not found any lead in the sheet tin used for canning of late years.

In conclusion:—1. I have never been able to satisfy myself that a can of ordinary tinned food contains even a useful medicinal dose of such a true soluble compound of tin as is likely to have any effect on man. 2. As for the metal itself, that is the filings or actual metallic particles or fragments, one ounce is a common dose as a vermifuge; harmless even in that quantity to man, and not always so harmful as could be desired to the parasites for whose disestablishment it is administered. One ounce might be contained in about four hundredweight of canned food. 3. If a possibly harmful quantity of a soluble compound of tin be placed in a portion of canned food, the latter will be so nasty and so unlike any ordinary nasty flavor, so "metallic" in fact, that no sane person will eat it. 4. Respecting the globules of solder (lead and tin) that are occasionally met with in canned food, I believe most persons detect them in the mouth and remove them, as they would shots in game. But if swallowed, they do no harm. Pereira says that metallic lead is probably inert, and that nearly a quarter of a pound has been administered to a dog without any obvious effects. He goes on to say that as it becomes oxidized it occasionally acquires activity, quoting Paulini's statement that colic was produced in a patient who had swallowed a leaden bullet. To allay alarm in the minds

of those who fear they might swallow pellets of solder, I may add that Pereira cites Proust for the assurance that an alloy of tin and lead is less easily oxidized than pure lead. 5. Unsoundness in meat does not appear to promote the corrosion or solution of tin. I have kept salmon in cans till it was putrid, testing it occasionally for tin. No trace of tin was detected. Nevertheless, food should not be allowed to remain for a few days, or even hours, in sauce-pans, metal baking pans, or opened tins or cans, otherwise it may taste metallic. 6. Unsound food, canned or uncanned, may, of course, injure health, and where canned food really has done harm, the harm in all probability has been due to the food and not to the can. 7. What has been termed idiosyncrasy must also be borne in mind. I know a man to whom oatmeal is a poison. Some people cannot eat lobsters either fresh or tinned. Serious results have followed the eating of not only oatmeal or shell fish; but salmon and mutton; hydrate (misreported nitrate) of tin being gratuitously suggested as being contained in the salmon in one case. Possibly there were cases of idiosyncrasy in the eater, possibly the food was unsound, possibly other causes altogether led to the results, but certainly to my mind the tin had nothing to do with the matter.

In my opinion, given after well weighing all evidence hitherto forthcoming, the public have not the faintest cause for alarm respecting the occurrence of tin, lead, or any other metal in canned foods.—PROFESSOR ATTFIELD, F.R.S., in *Phar. Jour. and Trans.*, March 8th, 1884, p. 719.



THE ESTIMATION OF ETHYL NITRITE IN SPIRIT OF NITROUS ETHER.*

THERE are few pharmacopœial preparations the tests for which are so eminently unsatisfactory as those for spirit of nitrous ether. The following are some of the many tests that have been employed:—

I. The chloride of calcium test.—If the spirit be shaken with twice its volume of saturated solution of chloride of calcium, 2 per cent will separate as an ethereal liquid. This test gives no definite indication of the amount of ethyl nitrite.

II. A test described by Mr. Dott, *Pharm. Journ.* [3], xiv., 819.—To the spirit, solution of potassium iodide and a little starch paste are added, and the mixture titrated with volumetric solution of hyposulphite of sodium till colorless. This test gives fallacious results, for it appears that the nitric oxide which is liberated becomes oxidized to nitrous acid again, which liberates more iodine from the solution. A spirit known to contain 2 per cent of ethyl nitrite was estimated by this method. It was not till an amount of hyposulphite solution equivalent to 16 per cent of ethyl nitrite had been added that the blue color of the solution was permanently got rid of.

III. A test described by Mr. Symons *Pharm. Journ.* [3], xiv., p. 819.—The spirit to be tested is mixed with an acid solution of ferrous sulphate, and the depth of color of the mixture compared with a similar one containing a spirit in which there is a known amount of ethyl nitrite. As, however, spirits containing the same amounts of ethyl nitrite produce different shades of color, and as the color quickly fades, this test is not reliable.

IV. Hoffmann's test, modified by Dupré, *Pharm. Journ.* [3], x., p. 93.—The spirit is here saponified with potash, the alcohol evaporated off, the residue re-acidified and titrated with standard solution of permanganate of potassium till its color no longer disappears. This method has been shown by Mr. Dott to give variable resuls.

V. A test proposed by Professor Eykman.—It depends on the production of a scarlet color with a mixture of phenol and sulphuric acid. This reaction is also given by aldehydes, as demonstrated by Mr. W. R. Dunstan in a paper read at a meeting of the School of Pharmacy Students' Association (*Pharm. Journ.* [3], xiv., 837).

VI. Rosenbladt's test (*Zeitsch. Anal. Chem.*, xvii., Heft 3).—The spirit is saponified with alcoholic potash, the alcohol driven off by evaporation, and the residue heated with concentrated solution of ammonium chloride in an atmosphere of carbonic acid. The amount of nitrogen evolved is measured and from that the percentage of ethyl nitrite is calculated. This test, Professor Eykman has shown, gives results far too low, as the nitrogen evolved is only about half the theoretical amount.

VIII. Eykman's test, NEW REMEDIES, May, 1882.—This is the only test at present suggested which has not been condemned as unreliable for estimating the nitrous constituent. It consists in the measurement of the volume of nitric oxide given off when the spirit is heated with an acid solution of ferrous sulphate—

$$2FeSO_4 + H_2SO_4 + 2EtNO_2 = Fe_2SO_4 + 2EtHO + 2NO.$$

The following are notes upon several experiments which were made in order to determine the value of this test.

The apparatus used was the same as that figured in the journal last named, with the exception of the flask with the retort-like neck, for which I substituted bent tubes fitted into an india-rubber cork kept wet with water.

The solutions used were an acid solution of ferrous sulphate, about 1 in 5 or 10, and a soda solution of specific gravity 1.1 to 1.15, which had been freed from oxygen by the addition of a little ferrous sulphate solution.

The following precautions were found necessary in order to obtain reliable results:—If a spirit contain more than a normal amount of nitrous ether, proportionally more ferrous sulphate solution must be employed, as otherwise an excess of gas will be formed and lost. This was the cause of error in experiment D.

The contents of the flask must not be boiled too long, for if the soda solution becomes much heated, dissolved gases are given off, and make the results too high, and if it rises to the boiling-point, the steam ceases to be condensed, suddenly fills the tube, and, together with nitrous oxide, escapes at the bottom.

In reading off the amount of gas, the soda solution remaining in the tube must be replaced by water, and the sides of the tube rinsed with water in order to remove any adherent soda solution, which, being of a higher specific gravity, would decrease the pressure on the gas; then immerse the tube under water till the temperature is normal, and read off the volume of the gas. Professor Eykman directs that the reading should not be taken for an hour, but as the nitric oxide is constantly being oxidized by the oxygen dissolved in the water to the readily soluble higher oxides, the readings would be too low if this were done.

If an india-rubber cork be used for the flask, it must be kept moist, as when the flask is vacuous, air readily enters through the pores, unless it be wet with water. This was the cause of error in experiment A.

Loss of gas by evaporation from the mixture before it be drawn into the flask must be avoided. Sufficient ferrous sulphate solution and a tube not too large will partially prevent this. What loss is unavoidable will be counterbalanced by the gases previously dissolved in the ferrous sulphate solution, which are given off when exposed to the partial vacuum in the flask. These gases amount to 1 C.c. in the quantity usually used.

The percentage of nitrous ether is obtained by the following formula:

$$\frac{\text{Observed volume}}{\text{Sp. gr.} \times \text{amt. of spt. taken}} \times \frac{15}{111\,80} \times \times \frac{14}{30} \times \frac{100}{1} \text{ or } \frac{V}{S \times A} \times 0.336 = \text{per cent}$$

of $EtNO_2$, with corrections for temperature and pressure of great exactness is required.

The following are results which were obtained.

Spirit	A.	Exp.	1.	68 C.c.	= 5.4%	$EtNO_2$
"	"	"	2.	15* "	= 1.1%	"
"	B.	"	1.	28.5 "	= 2.3%	"
"	"	"	2.	28.5 "	= 2.3%	"
"	C.	"	1.	13.5 "	= 1.1%	"
"	"	"	2.	13.25"	= 1.1%	"
"	D.	"	1.	75 "	= 6.0%	"
"	"	"	2.	82* "	= 6.6%	"
"	E.	"	1.	63.5 "	= 5.1%	"
"	"	"	2.	63.5 "	= 5.1%	"
"	F.	"	1.	1.5 "	= 0.1%	"
"	"	"	2.	1.5 "	= 0.1%	"

A glance at the foregoing table will show that, with the exception of the figures marked with an asterisk, the discrepancies of which have already been explained, Eykman's process gives concordant results in each pair of experiments, no matter whether the solutions be weaker or stronger than the official or commercial varieties of spirit of nitrous ether. The method would seem, therefore, to be trustworthy.

It has been pointed out that this process estimates the free nitrous acid as well as nitrite of ethyl.

Mr. MacEwan estimates the free nitrous acid separately, which may then be substracted from the total nitrites. He adds a drop of methyl orange to the spirit, and then titrates with soda solution till the pink color has disappeared; but the results obtained are not reliable, for spirit of nitrous ether itself was found to prevent the formation of the pink color, and acetic acid has been shown by Mr. Proctor (*Pharm Journ.* [3], xiii., 73) to produce it as well as free nitrous acid. But it would not seem necessary to estimate the free nitrous acid separately, for together with the alcohol in the spirit it will probably have the same therapeutical effect as nitrite of ethyl itself. The freedom from much color, and the gentle effervescence with bicarbonate of potassium will give a fair indication of the absence of great excess of free acid.

Prof. Eykman's test has been objected to because it is too delicate an operation for ordinary use, but with the above precautions, and after a few trials, I believe it will be found to be as simple as and far more reliable than any other test which has been proposed.

The foregoing experiments were commenced at the suggestion of Prof. Attfield, and were carried out in the laboratories of the Pharmaceutical Society.

* Read at a meeting of the School of Pharmacy Students' Association, June 26th, 1884, by T. S. Dymond.

CORRESPONDENCE.

On Prof. Eykman's Assay Process of Spirit of Nitrous Ether.

SOME time ago we were informed by one of our correspondents that he had employed Eykman's process for the estimation of spirit of nitrous ether, and had observed the peculiarity that, while the test gave concordant results when it was performed upon different portions of the same sample, it did not show concordant results when tried upon various *dilutions* of this sample. That is, after having obtained, say thirty-six C.c. of NO gas from a definite volume of the original spirit, he should have obtained eighteen C.c. from the same volume of a mixture containing fifty per cent of the spirit.

We were inclined to believe, at the time, that our correspondent had committed some error in his manipulation or calculation, and, while waiting for a chance to try the experiment ourselves, referred the matter to Prof. Eykman, whose reply is now at hand, and is as follows:

Concerning the process for the estimation of nitrous ether, with which one of the manufacturers did not obtain concordant results, I have not had such experience. On the contrary, good—neutral or nearly neutral—spiritus ætheris nitrosi, if diluted with two or four times its volume of alcohol, always gave the corresponding quantity of NO. Small differences, though, must occur, as in the formula no correction has been admitted for the nitrogen contained in the several liquids, viz., $FeSO_4$ solution, dilute H_2SO_4. This correction amounts to about 0.5-1 cubic centimeters; hence if 5 cub. centim. of any spir. æther. nitros. would give 40 cub. centim. gas, 2.5 cub centim. of the same spir. æther. nitros. would give, *f. i.*, 20.3 cub. centim., instead of 20 cub. centim., and 1.25 cub. centim. of the same spir. æther. nitros. would give about 10.3 to 10.4 cub. centim., instead of 10 cub. centim., but this incorrectness can be neglected when estimating the nitrous ether in spir. nitr. dulcis, as there is always a little less gas obtained than the theoretical quantity, and an *absolutely* correct result cannot be obtained; but if the apparatus is well handled in all details, the results do not vary more than 2 or $\frac{3}{100}$ of the theoretical quantity.

J. F. EYKMAN.

TOKIO, July 10th, 1884.

A further proof of the accuracy and reliability of Prof. Eykman's process is furnished by the experiments of Mr. T. S. Dymond, cited on page 195 of this number.

Extemporaneous Preparation of Citrate of Iron and Quinine (or Strychnine).

I HAVE been for some time extemporizing *Ferri (et Ammonii) et Quininæ Citras* and *Ferri (et Ammonii) et Strychninæ Citras* by preparing standardized solutions of citrate of quinine and citrate of strychnine, so that in every drachm of solution there will be the pharmacopœial quantity of quinine and strychnine in every drachm of each respective salt, and adding afterwards to citrate of Iron and Ammonium. I find the product stable and the process economical. Although not strictly pharmacopœial, is there any objection to offer?

E. D. DRAKE.

TOLEDO, O., August 23d, '84.

In reply we would say that perhaps only a *technical* objection could be raised to the process here described, inasmuch as it is not strictly pharmacopœial. In reality, however, the products thus obtained will no doubt be therapeutically identical with those of the pharmacopœia, provided only that the exact proportions of alkaloids to the iron salt are maintained. The respective compounds of the pharmacopœia (*Ferri et Quininæ Citras*, in form of liquor, and *Ferri et Strychninæ Citras*) cannot be regarded as true double salts, and are at best only mixtures, and their therapeutic action merely depends upon their single constituents.

Swift's Syphilitic Specific.

IN the April number of the AMERICAN DRUGGIST, p. 78, you ask for the composition of "*Swift's Syphilitic Specific.*" I give you the receipt obtained from Dr. Swift, of Georgia, who originated the formula in his country practice. The quantities, as well as the mode of preparing it, are not pharmaceutically correct, and have probably been improved by the persons who manufacture it on a large scale. As given by Dr. Swift, the formula is as follows:

"White Ash, Prickly Ash, White Sumach, Red Sumach, Red Shank, Red Sassafras, one grasp of each (a grasp being as much of the bark, six inches long, as can be grasped in the hand).

"Boil for three days, covering the pot with pine-tops. Boil slowly and fill the pot occasionally with water, until it becomes a dark brown,

"Dose, a wineglassful, three times a day."

I am inclined to think that iodide of potassium has been added.

Very truly yours,

A. M. BOYD, M.D.

TUXPAN, Mexico.

Fastening Labels on Tin.

ONE of our correspondents writes:

"Concerning the query 1,315 in the August number of AMERICAN DRUGGIST, p. 155—to make labels stick to tin—I can recommend a solution of

Balsam of fir..... 1 part.
in Oil of turpentine..2 or 3 parts.

The labels stick so well that they cannot be washed off with water."

Sanitas.

DEAR SIR:—In your June issue,* I observe there is a note relative to the manufacture of "Sanitas," in which you express some doubt as to whether "Sanitas" is still being manufactured.

Permit me to state that the "Sanitas" disinfectants are being manufactured under my patents on a very large scale in this country, and that we own patents also in the United States, in which country we hope shortly either to commence the manufacture on our own account or to arrange for the manufacture otherwise. Believe me, yours faithfully,

C. W. KINGZETT,
Managing Director.

LONDON, Sept. 9th, 1884.

Dr. Robert Empie Rogers, Emeritus Professor of Chemistry in the Jefferson Medical College, Philadelphia, died in Philadelphia suddenly on the 6th of the present month. He was born in Baltimore, Maryland, in 1814, and was graduated in medicine at the University of Pennsylvania in 1836. In 1844 he was elected Professor of Chemistry in the University of Virginia, and in 1852 succeeded his brother, Dr. J. B. Rogers, as Professor of Chemistry in the University of Pennsylvania, a position which he held until 1877, when he accepted the same chair in the faculty of the Jefferson Medical College. He resigned the duties of this position only a few weeks before his death, on account of his failing health.

* [Query 1,299.]

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,348.—**Must a Graduate of Pharmacy Undergo an Examination before the New York State Board of Pharmacy?** (R.).

Paragraph 2 of the new pharmacy law (see AM. DRUGG., June, p. 111) defines one of the duties of the Board to be:

1. "To examine *all* persons applying for a license under this act, and to grant licenses to such persons as may be entitled to the same."

This compels the Board to actually examine *all* applicants, save and except such as are specially exempted by subsequent sections.

Paragraph 3 enumerates those classes of persons who shall be granted a license, *without examination*, provided they comply with certain requirements specified in subsequent sections.

These classes of persons thus exempted from examination are the following:

1. Those who practise pharmacy, etc., on their own account, at the time of the passage of the act (that is, on or before May 31st, 1884).

2. Those who shall have served five years or more, at the time of passage of the act, in the business of dispensing, etc., provided he is twenty-one years of age (the word "at the time of the passage of this act," are not repeated here, and quite properly, since a period of ninety days after the organization of the Board is allowed within which application for a license under this section may be made, the applicant need not have been of age at the time of the passage of the act, but may become of age any time during the ninety days. If he is not of age at the expiration of the ninetieth day, he cannot obtain a license without examination).

3. Those who are licensed by other Boards of Pharmacy legally created under the laws of the State of New York (that is, those licensed by the old and the new Board of Pharmacy of the City and County of New York and the Kings County Board of Pharmacy).

4. Those who hold a diploma of graduate of any incorporated college of pharmacy *of this State.* (This includes, therefore, at present, only the graduates of the College of Pharmacy of the City of New York and of the Albany College of Pharmacy. Graduates of colleges of pharmacy situated in other States will therefore have to be examined.)

No. 1,349.—**Asphalt-Varnish** (R. M. B.).

A good asphalt varnish for coating stove-pipes, etc., may be made by heating together:

Asphalt.....	100 parts
Copaiba.....	5 "
Linseed oil.....	5 "

and digesting the resulting mass with benzol (coal-tar benzol) 150 parts.

The only difficulty with this is, that during its preparation and during its application (until perfectly dry) no light or fire must be brought near it, otherwise it will ignite.

If asphalt-pitch (the final hard residue of the paraffin factories) is used,

instead of asphalt, oil of turpentine may be used to dissolve it.

Another formula is:

Asphalt	200	parts
Amber Rosin	100	"
Boiled Linseed Oil	50	"
Oil of Turpentine	1000	" or q. s.

Melt the first three ingredients with a moderate heat, then remove them from the fire and mix them with the oil of turpentine previously heated, until the proper thickness has been obtained.

Another:

Asphalt	100
Pitch	20
Benzol	300

Melt the two first, and dissolve in the benzol.

Once more we would caution against using the varnish in the neighborhood of any fire, as several serious accidents have happened in this way.

No. 1,350.—**Axle Grease containing Castor Oil** (J. D. S.).

The best axle grease *containing* castor oil, in our opinion, is castor oil itself.

If you have a stock of this on your premises, you need not use the perfectly clear oil, as it first flows from the can, but may use the drainings or last portions, which are often a little cloudy and less valuable for other purposes.

No. 1,351.—**List of Incompatibilities** (H. G. H.).

It would be quite impracticable to attempt drawing up a "complete" list of incompatibilities, even if only those substances which are incompatible towards a single compound were to be enumerated. Those who compound medicines need at least that much knowledge of chemistry as would enable them to apply certain general laws in special cases. For instance, that substances containing tannic acids are incompatible with iron or with alkaloids. In the modern text-books on Practical Pharmacy (Parrish's, Proctor's, etc.) you will find more or less space devoted to this subject. The dispensatories also frequently quote, under the different headings, such incompatibles as would render the action of the drug nugatory or pernicious. The pharmaceutical journals also frequently discuss special cases of this kind which are brought to their notice. In the pages of this journal, you will find a variety of cases discussed.

No. 1,352.—**Methylic Alcohol** (E. D. D.).

This correspondent asks: "What commercial process is in vogue for the purification of methyl alcohol, prepared from crude wood vinegar? Is the process by conversion into methylic oxalate $(CH_3)_2C_2O_4$, and the subsequent decomposition of this crystalline compound by distillation with water, an econmical one in the preparation of pure methyl alcohol?"

From all we can learn, the process mentioned by our correspondent would not be likely to prove economical on a large scale. The usual method, we are informed, is to employ chloride of calcium.

Wood spirit is contained in the aqueous liquid passing over during the dry distillation of wood. It is accompanied by acetic acid, acetone, and pyrogenous products. On saturating this aqueous liquid with lime, the acetic acid is neutralized and some of the empyreumatic oils are separated. If the liquid is now distilled, the crude wood-spirit of the market is obtained, which may be freed from most adhering impurities by repeated distillation over caustic lime. The final colorless distillate still contains, however, various foreign substances, which are removed by treating the mixture with chloride of calcium. This salt has the peculiar property of forming a crystalline compound with the methyl alcohol, which is separated, pressed, and then heated to 100° C. (212° F.), which temperature is insufficient to decompose it, but is high enough to remove nearly all the accompanying impurities. The compound of chloride of calcium and methyl alcohol, now remaining in the retort, is then distilled with water (or steam), when the methyl alcohol accompanied by water passes over. The water is finally removed by one or more rectifications over lime.

The oxalic ether process is only used, so far as we are aware, when it is desired to produce a perfectly pure product, such as is hardly ever required in large quantities. To prepare it, methyl alcohol, as obtained by the chloride of calcium process, is heated with oxalic acid (dried at 100° C.), or distilled with oxalic and sulphuric acids, or with sulphuric acid and acid oxalate of potassium.

In the first process, the oxalate of methyl crystallizes out; in the other two processes it passes over and condenses. By distilling it afterwards with water, it splits up into methyl alcohol and oxalic acid, which may be used over again. Wöhler was the first who proposed this process, and recommended it to be applied to the crude spirit itself. From what we can learn, however, it is not generally used.

Should we be in error in this matter, we would be glad to be corrected by any of our readers.

As to which process is really more economical, this is a question which can only be decided by carrying both out systematically on a somewhat large scale, and noting expense and quantity of product.

No. 1,353.—**Jackson's Cough Syrup.**

The following is the formula recommended by Prof. J. U. Lloyd to be followed as a standard for the above preparation, which also goes by the name of *Compound Syrup of Morphine:*

Fl. ext. ipecac	½	fl. ʒ
" " senega	3	fl. ʒ
" " rhubarb	4	fl. ʒ
Sulphate of morphine	8	gr.
Oil of sassafras	32	drops.
Syrup, enough to make	32	fl. ʒ

No. 1,354.—**Preparation of Maltose** (D. W. B.).

Dubrunfant has given detailed information as to the best methods for preparing maltose—either crystallized or in form of syrup—on the large scale. The different steps of the operation may be briefly described thus:

1. *Water.* The water to be used must be freed from suspended impurities, and must be free from organic matters (which latter would eventually produce parasitic ferments). It must also be deprived of any dissolved carbonate or sulphate of calcium, since the former salt, by its alkaline reaction, facilitates butyric fermentation, while the latter becomes troublesome during the concentration. If possible, distilled water should be employed.

2. *Crude Material.* For crystallized sugar: starch in as pure a condition as possible. For syrup: flour, potatoes, and coarsely-ground grain.

3. *Malt.* In making crystallized maltose, malt itself is not used, because the crystallization is interfered with by various substances (not well known as yet) which accompany the diastase. In this case a watery extract of malt is prepared. The malt, previously ground to a coarse powder and dried at a low temperature, is soaked in four times its weight of water at 30° C. (86° F.), after a few hours the liquid is removed by expression, and then filtered. The liquid may also be obtained by successively percolating through a series of displacers until the percolate has the proper density. In place of malted barley, any other kind of grain may be used, provided it develops saccharific properties on sprouting or when it is malted.

4. *Solution of the Starch.* The starch is first converted into paste by mixing it with twice its weight of water, then mixed with five per cent of malt (or malt extract), and strongly agitated. At the same time, a quantity of water amounting to ten times that of the starch is heated to 90° C. (194° F.), and this liquid poured, together with the starch mixture, in two converging streams through a specially arranged sieve, where the mere contact of the liquid is sufficient to render the starch soluble. Complete solution is effected by blowing in steam. On entering the boiler, the mixture has a temperature of 75° C. At 90° C. the mass is as thin as water, and the operation is finished.

5. *Saccharification.* The liquid is cooled off in any desired manner to 40° C., and enough extract of malt added to correspond to ten or fifteen per cent of the weight of the starch employed. Saccharification begins at once, and during it the temperature must be kept between 40° and 50° C. The progress of saccharification is controlled by iodine solution (which ceases to produce a blue color when all the starch is converted, which is the case in two or three hours). If syrup is to be made, the process may now be interrupted; but if crystalline maltose is wanted, the operation must be kept up during twelve to fifteen hours. During the process not the least trace of acid must make its appearance, which is usually caused by the use of impure water or by exceeding the temperature of 50° C.

6. *Filtration and Concentration.* If pure starch has been used, the liquid may be separated from the undissolved residue by single filtration. In other cases, the residues must be pressed. After the liquid had been clarified (best by passing it through an Oldham-Farquhar filter), it has a spec. gr. of 4° B., and is then concentrated to 20° B., when the now yellowish juice is allowed to cool and become clear by standing. It is then filtered cold, so as to prevent the resolution of certain nitrogenous substances. Finally the liquid is passed through freshly ignited and carefully washed charcoal, when it flows off bright and brilliant and colorless. It is next concentrated to 40° B. in copper or tinned-copper apparatus (in contact with iron the liquid turns deep black).

Solid maltose (containing 80% pure sugar) has this advantage before glucose, that it is not hygroscopic, and possesses a very agreeable, sweet taste and an aromatic odor.

No. 1,355.—**Syrup of Blackberries.** (——).

We presume that you mean syrup of blackberry *fruit*, and not the syrupus rubi (or syrup of blackberry *root*) of the U. S. Ph. Blackberry syrup may be prepared exactly like raspberry syrup, for which you will find a good working formula in the pharmacopœia (p. 327).

No. 1,356.—**Solution of Tartrate of Iron and Potassium** (Dr. C. N. A.).

This correspondent wants to know how to prepare a solution of tartrate of iron and potassium, which will remain stable for more than a few days. He says that he has tried glycerin with a solution made with soft water, but it would not remain more than three or four days.

We would advise our correspondent not to expect to find a satisfactory method of keeping the above-named salt in solution. As it occurs in commerce, it usually leaves a slight insoluble precipitate when dissolved in water, which can, however, generally be redissolved by the cautious addition of ammonia. An aqueous solution will, of course, not keep at all, this being a common property of solutions containing tartrates. Alcohol, if added in sufficient quantity to prevent this decomposition, will cause a part of the salt to precipitate;

and, if glycerin is to be used as a preservative, it must be used with as little water as possible, or better without any water at all, but it takes some time to produce a solution. If enough water of ammonia be added to the hot mixture of glycerin and the powdered salt, the latter will eventually disolve, and most of the excess of ammonia may be driven off again by careful heating, but the result is not always satisfactory. Besides it is not unlikely that the product would be irritating to the stomach.

Taking everything in consideration, and remembering that tartrate of iron and potassium is one of the very best ferruginous preparations, according to the best authorities, we think it would be always preferable to administer it in powder or in freshly-prepared solution.

Sanitas Preparations (Supplement to query 1,299).

We are informed by Messrs. Lilly, Rogers & Co., of Baltimore, that they keep in stock a full line of the preparations made by the Sanitas Co., London. See also correspondence on page 197.

No. 1,357.—**Hagan's Magnolia Balm.** ("Subscriber").

According to Prof. Chandler's analysis, this contains nothing but water and 23.7 per cent of oxide of zinc.

No. 1,358. — **Edge-Blacking for Shoes** ("Subscriber").

For this purpose a simple watery solution of common sulphate of iron in about 12 parts of water is usually employed. There is sufficient uncombined tannin in new leather to form an ink with the iron solution at the time of its application.

No. 1,359.—**The Proper Color of Male Fern Root** (U. S.).

In this country it is not usual to find male fern root kept in drug stores, and we have no doubt that the particular lot which our corresponndent found among the stock of his newly purchased store, and which he suspects to be inert, is suffering from old age. *Whole* male fern root cannot be kept in good condition at all, for any considerable time.

If it is to be kept, it must be, immediately after being collected, deprived of the fleshy scales and cut into thin slices, which should have a fresh greenish-yellow color, and any portions that have a damaged or discolored appearance should be thrown away. It may then be dried and kept in securely stoppered vessels, or better, it may be powdered, and the powder kept in hermetically closed receptacles, in a dark place.

No. 1,360.—**Scent for Hair Oils** (E.).

Oil of Bergamot alone makes an agreeable scent for hair-oil. A great variety of other simple or compound scents may be produced by mixing. A few simple and inexpensive forms are the following, which may be varied according to the taste of the user.

(The oil of cloves should be added with caution, as an excess is very prominently perceptible.)

Parts of	1	2	3	4
Oil of Bergamot	4	4	2	6
Oil of Lemon	2	2	4	2
Oil of Lavender	1	1	—	—
Oil of Rosemary	—	1	—	—
Oil of Cloves	1–4	2	1	—

Our correspondent says that he is in the habit of coloring *petrolatum* by digesting it with alkanet at a gentle heat, and incorporating essential oils when cold. This forms an excellent pomatum. For many years past, vaseline has been used, by barbers especially, in place of hair-oil.

No. 1,361.—**Effervescing Salicylic Mixture.** (F. M.).

It is quite possible to make a dry preparation, resembling effervescing citrate of magnesium, but in this case the salicylic acid must be added last, and the whole must be reduced to a fine, uniform powder. It may be finished by moistening with alcohol, as in the officinal process for granular citrate of magnesia, although the salicylic acid will be thereby dissolved, and a slight effervescence be set up. Yet enough bicarbonate of sodium will remain undecomposed to produce effervescence when added to water.

As the formula, however, is rather complicated, and our experience is in favor of one much more simple, we will only give the latter.

Mix intimately, in a mortar:

Salicylic Acid.....500 parts
Bicarbonate of Sodium...306 "

and keep the powder in well-stopped bottles. The above proportions, when combined, produce 612 parts of salicylate of sodium. A dose of 10 grains of salicylate of sodium would, therefore, be represented by about 13 grains of the above mixture. It is best administered with the Elixir of Curaçoa of the New York and Brooklyn Formulary, thus:

Salicylic Mixture (as above). 10 grs.
Elixir of Curaçoa..... 1 fl. oz.
Carbonic Acid Water.about 2 fl. oz.

Place the salicylic mixture in a tumbler, pour upon it the elixir, and mix rapidly with a glass rod or spoon, then add the carbonic water and drink at once. In this form, the salicylate does not usually cause nausea.

No. 1,362.—**Clear Solution of Pepsin** (F. M.).

Our correspondent says that he has great trouble in obtaining a clear solution when making Liquor Pepsini. He says that, after he adds the hydrochloric acid and filters it, the solution is very cloudy.

In reply we would say that it probably depends *partly* on the quality of the pepsin he uses. The less mucus the pepsin contains, the clearer will be its aqueous solution. The market affords several saccharated pepsins which will produce a satisfactory product.

When the pharmacopœia committee deliberated on, and adopted the formula finally made officinal, the excellence and usefulness of the *unsaccharated* or undiluted pepsins had not yet become generally recognized; otherwise, the Committee might possibly have adopted another formula. As we have found the officinal preparation rather weak, we have for some time past used a different mode of preparing it, namely:

Pepsin (in scales)... 24 parts.
Hydrochloric acid.. 24 "
Glycerin..... 800 "
Water enough to make 2,000 "

Dissolve the pepsin (which should be of high digestive power) in 500 parts of water; then add the glycerin, hydrochloric acid, and lastly enough water to make the product weigh 2,000 parts. Then mix it with 60 parts of starch, by shaking, and filter. The starch will help to envelop and retain a large portion of the suspended matters which render the liquid cloudy. It will happen but rarely that the first filtrate will be perfectly clear or, at least, remain so for any length of time. The suspended matters are in so fine a condition that some of them will pass through the filter. Gradually, however, they will agglutinate and form larger granules or flakes, and, if the liquid be again filtered after some time, particularly after it has become clear by depositing, it will usually come through quite clear. If the liquid pepsin is to be set aside before fully deprived of all suspended matters, it is very apt to become mouldy, which, indeed, will happen also to the perfectly clear solution if long exposed to the air. To prevent this, a layer of pure olive-oil (salad-oil) may be poured on the liquid, and when the clear contents of the stock-bottle are to be removed so as neither to disturb the sediment nor the layer of oil, a siphon-tube may be employed.

No. 1,363.—**Tincture of Quillaia** (M.).

A tincture of quillaia (or soap-bark) suitable for use at the soda fountain is made by percolating or macerating 1 part of powdered quillaia with enough alcohol (or a mixture of 2 volumes of alcohol and 1 volume of water) to make 5 parts of tincture.

No. 1,364.—**Tooth Powder** (N.).

Here are a few formulæ to select from:

1. *Carbon Tooth Powder.*

	Parts.
Charcoal, in very fine powder	2,000
Cinchona bark, " "	500
Oil of Bergamot	15
Oil of Lemon	30

Mix intimately.

2. *Chalk Tooth Powder.*

	Parts.
Precip. Carbonate of Calcium	2,000
Starch	15
Orris Root, powd	250
Oil of cinnamon	30

Another.

	Parts.
Precip. Carbonate of Calcium	2,000
Camphor	500
Orris Root, powd	1,000
Cinnamon	250

Another.

	Parts.
Precip. Carbonate of Calcium	2,000
Orris Root, powd	1,000
Oil of Rose	5 to 15
Oil of Sandal-wood	10

Another.

	Parts.
Precip. Carbonate of Calcium	2,000
Cuttle Fish Bone, powd	1,000
Orris Root, powd	1,000
Oil of Bergamot	20
" " Lemon	40
" " Neroli	10
" " Portugal	20

Formulæ asked for.

(Consult our remarks on p. 98, May number, top of first column.)

1. *Oriental Tooth Paste* (Jewsbury and Brown, Manchester).
2. *Kennedy's Salt Rheum Ointment.*
3. *Starkey and Palm's Compound Oxygen gas.*
4. *William's Indian Pile Ointment.*
5. *Eureka Catarrh Remedy Specific.*
6. *Dr. Foul's Pile and Humour Cure.*

BIBLIOGRAPHY.

THE NATIONAL DISPENSATORY. Containing the Natural History, Chemistry, Pharmacy, Actions and Uses of Medicines, Including those recognized in the Pharmacopœias of the United States, Great Britain, and Germany, with numerous references to the French Codex. By ALFRED STILLÉ, M.D., LL.D., etc., and JOHN M. MAISCH, Phar.D., etc. Third Edition. Thoroughly Revised, with Numerous Additions. With 311 Illustrations. Philadelphia: Henry C. Lea's Son & Co., 1884, pp. 1,755, roy. 8vo.

WE can hardly attempt more than a notice of this very elaborate work. It has been but a short time in existence, but has already undergone two revisions, and in its latest form is wonderfully comprehensive. In this latest edition, the publisher has adopted the incised alphabetical index on the margins of the leaves, so as to very considerably facilitate reference to its contents.

WHARTON AND STILLÉ'S MEDICAL JURISPRUDENCE. Fourth Edition. Edited by ROBERT AMORY A.B., M.D., etc., and EDWARD S. WOOD, A.M., M.D., etc. Vol. II. Philadelphia: Kay & Brother, 1884, pp. 669, roy. 8vo.

THE considerable additions which have been made of late years to the literature of poisons have rendered necessary the division of the work of which this forms a part, and the devotion of an entire volume to the subject. The editors are well known as authorities on therapeutics and medical chemistry, and they have evidently expended much time and labor upon the revision.

THE AMERICAN HOMŒOPATHIC DISPENSATORY. By THEO. D. WILLIAMS, M.D., Member Illinois State Pharmaceutical Association, etc. Chicago: Gross & Delbridge. 1884. Pp. 698, xv., 8vo.

THIS is the most comprehensive of the several homœopathic pharmacopœias which have lately been issued in the United States. Its author recognizes the fact that it lacks the authority which it would derive from its acceptance by some such body as the American Institute of Homœopathy, but offers it as a foundation for such a work. So far as we perceive, it is entitled to such consideration. It contains no references to the botanical or chemical histology of drugs, nor to their therapeutic or toxic effects, being limited strictly to the preparations. There is a section on General Pharmacy, followed by one on General Formulas. The major portion of the work relates to Special Pharmacy, and the various subjects follow in alphabetical order. The directions are very explicit, and any pharmacist should be able, with their aid, to undertake the manipulation of homœopathic preparations.

AMERICAN MEDICINAL PLANTS: An Illustrated and Descriptive Guide to the American Plants Used as Homœopathic Remedies: Their History, Preparation, Chemistry, and Physiological Effects. By CHARLES F. MILLSPAUGH, M.D. New York and Philadelphia: Boericke & Tafel. Sm. folio.

THIS work was announced by us in our last volume. The first fasciculus now received contains five numbers, and embraces the illustrations and text descriptive of Apocynum androsæmifolium, Ampelopsis, Asclepias cornuti, Berberis, Castanea vesca, Catalpa, Chelidonium, Chelone glabra, Chimaphilla, Dulcamara, Epigæa, Euphorbia corollata, Gaultheria, Hamamelis, Helianthus, Hydrastis, nula, Iris versicolor, Linaria, Lobelia syphilitica, Melilotus, Millefolium, Nymphæa, Pothos, Robinia, Sanguinaria, Sinapis nigra, Tabacum, Trifolium, and Trifolium repens.

The figures are drawn from growing plants by the author, and are intended to be as exact in dimensions and color as is possible. The whole series is to include one hundred and eighty plates, and will doubtless be a valuable addition to American medical botany. Although intended primarily for homœopathic physicians as an aid to the preparation of fresh-plant tinctures, the work should be equally valuable for other physicians and pharmacists in country neighborhoods.

THE EXTRA PHARMACOPŒIA of Unofficinal Drugs and Chemical and Pharmaceutical Preparations. By WILLIAM MARTINDALE, F.C.S., etc., and W. WYNN WESTCOTT, M.B., etc. Third Edition. London: H. K. Lewis, 1884.

THIS convenient little pocket-book has gone through two editions rapidly and has been revised a second time. It contains references to so many drugs and preparations in daily use, which are in vogue since the revision of the British Pharmacopœia, that its possession seems to be almost a necessity among British physicians and students. We have already spoken highly of the work, and this last revision increases its claims upon our favor.

PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION at the Thirty-first Annual Meeting, etc. Philadelphia: 1884.

THOUGH less voluminous than some of its predecessors, this volume is hardly less valuable as a year-book of pharmaceutical progress. The frontispiece is an excellent portrait of the late William Neergard, of New York City.

THE ALPINE WINTER CURE, with Notes on Davoz Platz, Wiesen, St. Moritz, and Maloja. By A. T. TUCKER WISE, M.D., etc. London: Baillière, Tindall & Cox, pp. 100, 8vo.

THIS is a convenient and desirable hand-book for those who desire a European winter climate at high altitudes.

AUSCULTATION, PERCUSSION, AND URINALYSIS: An Epitome of the Physical Signs of the Heart, Lung, Liver, Kidney, and Spleen in Health and Disease. By C. HENRI LEONARD, A.M., M.D., etc. Illustrated. Detroit: Illustrated Medical Journal Co.

ITEMS.

Cleveland School of Pharmacy.—This institution has existed in a quiet way for two years, averaging thirty scholars each session. This year, on account of the stringent Ohio Pharmacy Law, which requires all those who intend to become drug clerks to pass a thorough examination, it has been determined by the Cleveland Pharmaceutical Association to elaborate the course of study. Chas. W. Kolbe, M.D., Ph.D., will deliver the lectures on Chemistry, and Joseph Feil, Ph.G., those on pharmacy and materia medica. The school is conducted by the Committee on Pharmacy School of the C. P. A., of which Mr. E. A. Schellentrager is Chairman, and the sessions are held in the Society's rooms in the City Hall. The course is intended to meet the requirements of the Qualified Assistants' Examination of the Ohio Board of Pharmacy.

Ferrated Syrup of Peaches.—This is a delightful preparation, and may be made as follows: Take of good ripe peaches, free from stone, 1,000 parts (by weight); iron filings, free from copper, 50 parts, and sugar, 300 parts. Put the peaches in an iron vessel and mash them up, mixing sufficient water with them to make a paste; add the iron filings, and let the whole macerate for ten days, stirring frequently; then filter through a thick cloth to obtain the extractive matter. A little water is poured on the residue and filtered through paper. The filtrates are mixed, and to the fluid, which is of a brownish-green hue, is added the sugar. The mixture is now simmered at a moderate heat (not over 60° C.) to the consistence of a syrup. A clear greenish-brown fluid is the result, having the taste and smell of peaches, and giving the usual reactions of the iron preparations.—*Gazette de Medica di Torino.*

The cod-liver oil business is flourishing at Marseilles, and competition runs high. A repudiated advertisement of one of the manufacturers reads as follows: "The cod being one of the small fishes of the sea, is constantly tracked and pursued by its enemies, the whales and sharks, etc., therefore it lives in a constant state of fear, and it is a well-established fact that fear engenders in all living creatures jaundice and diseases of the liver. Consequently all codfish taken in the open sea have diseased livers. But all my fish are caught in a safe harbor, where marine monsters cannot enter. They live there in peace and comfort. Their livers are perfectly healthy, and that is the reason why my cod-liver oil is the best."—*Nat. Drug.*

Testing Drain Pipes.—An engineer tests all lengths of iron pipe to be put in for soil-pipes under his direction in a very simple and easily manipulated manner. The lengths as they come from the dealer are coated on the inside with a very thin coat of linseed or kerosene oil. This is done by drawing oiled waste through the pipes. The pipe is then set on end, and if, after a few hours, there is no presence of oil on the outside of the pipe, it is accepted. About seventy per cent of the best pipe stands this test.—*Nat. Drug.*

Grease Extractor.—German journals allude to the efficacy of "benzol magnesia" as a cleanser and grease eradicator. It is prepared by saturating calcined magnesia with benzol. A little of this powder rubbed on a greasy stain, on paper, or any fabric, will remove it, but old stains may require a repetition of the process. The mixture is said to be excellent for cleaning windows.

Professor Mallet, formerly of the University of Virginia, has been appointed to succeed Prof. Rogers in the chair of Chemistry of Jefferson Medical College.

PHARMACEUTICAL CALENDAR.—OCTOBER.

Additions to and Corrections of the following Calendar are solicited.

Date.	Society Meetings.
Wed. 1st.	Rhode Island State Pharm. Assoc.—Quart.
Friday 3d.	American Chemical Soc. Meets at New York.
Mon. 6th.	Pittsburg (Pa.) Coll. Pharm.—Quarterly.
Tues. 7th.	Erie Co. (N. Y.) Pharm. Assoc.—Buffalo.
	Davenport (Iowa) Pharm. Assoc.—Quarterly.
	Chicago Coll. Pharm.—Semi-Annual.
	St. Joseph (Mo.) Pharm. Assoc.
	Rhode Island Chem. and Drug Clerks' Assoc.
Thurs. 9th.	Newark (N. J.) Pharm. Assoc.
	California Pharm. Soc. & Coll. Pharm.—Quar.
	New York Germ. Apoth. Soc.
	Lancaster Co. (Pa.) Pharm. Assoc.
Mon. 13th.	Albany Co. (N. Y.) Pharm. Assoc.
	New York City Board of Pharm., 209 E. 23d street, at 3 P.M.—Examination.
Tues. 14th.	Kings Co. (N. Y.) Pharm. Soc.—Brooklyn.
Wed. 15th.	National Wholesale Drug Assoc.—Annual, at St. Louis, Mo.
Thurs. 16th.	New York Coll. of Pharm.—Quarterly Meeting and Revision of By-Laws.
Friday 17th.	Rhode Island Chem. and Drug Clerks' Assoc. Meet.
Tues. 21st.	St. Joseph (Mo.) Pharm. Assoc.
Thurs. 30th.	Kings Co. (N. Y.) Board of Pharm.—Brookl'n.